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New Polychaeta from Beaufort, with a Key to All Species Recorded from North Carolina

JOHN H. DAY

SEATTLE, WA
JULY 1973

National Marine Fisheries Service, Circulars

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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
Robert M. White, Administrator
NATIONAL MARINE FISHERIES SERVICE

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1. The environmental conditions at each station along the Beaufort Shelf Transect 3

NEW POLYCHAETA FROM BEAUFORT, WITH A KEY TO ALL SPECIES RECORDED FROM NORTH CAROLINA

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ABSTRACT

Over 6,000 polychaete worms belonging to 229 species were collected on a transect running from the sandy shore near Beaufort, N.C., to the upper part of the continental slope in 200 m. Eleven more species were collected from the shores of Beaufort Sound and from grab samples in 400, 600, and 3,020 m off North Carolina. The whole collection includes 19 new species, 2 new subspecies, and 16 new records for the United States. These have been described. An examination of the literature revealed that a further 83 species had been recorded by earlier workers so that a total of 323 species of polychaete worms are now known from North Carolina. Keys have been constructed to cover the whole fauna, all original records have been listed, and references to good descriptions of each species are given. During the course of the work several type specimens were examined and this has resulted in certain changes in nomenclature and the redefinition of certain genera in the families Orbiniidae, Flabelligeridae, and Ampharetidae.

INTRODUCTION

This study is based on material collected in 1965 while working at the Duke University Marine Laboratory in Beaufort, N.C. The aim of the main research work was to find the most suitable method for analysing distribution patterns across the continental shelf of North Carolina. The results have since been published by Day, Field, and Montgomery (1971). The data for the analysis were obtained by sampling the benthic invertebrates along a line of 10 stations called the Beaufort Shelf Transect, which ran from the shore to 200 m on the continental slope. Over 15,000 specimens belonging to 619 species were collected in this way and among them were about 6,000 polychaete worms belonging to 229 species. In order to identify them, all the species that had previously been recorded from North Carolina were listed and the literature was searched for good diagnostic descriptions. It was soon found that more than half the species from the transect were new to North Carolina and quite a number of them were new species. The new species and new records were added to the list as they were identified and eventually keys were constructed to cover the whole fauna. As there is no comprehensive work covering the warm water fauna of the Atlantic coast of the United States, it is hoped that this account of the fauna of North Carolina may be of use to other workers.

A numbered list of papers containing original records of Polychaeta from North Carolina is

given below and full references to these and other papers consulted during the course of the work will be found at the end of this report. For the benefit of later workers it may be mentioned that several papers were found to be particularly useful. An early paper by Andrews (1891a) describes several new species. Hartman (1945) describes many new species and gives keys and ecological notes of these and the other species recorded by earlier workers. In all she deals with 104 species found on the intertidal banks and shallow waters around Beaufort. Hartman (1951), in her account of the fauna of the Gulf of Mexico, describes a few more species which occur in North Carolina. Pettibone (1963a), in an account of the families Aphroditidae through Trochochaetidae of New England, lists several records from deeper waters off North Carolina, and her keys and descriptions are most useful. Most of the other papers give lists of species without descriptions.

Chronological list of papers containing original records of Polychaeta from North Carolina

1. Stimpson, 1856
2. Verrill, 1878
3. Webster, 1879
4. Wilson, 1882
5. Andrews, 1891a
6. Andrews, 1891b
7. Wilson, 1900
8. Pearse, 1936
9. Pearse, Humm, and Wharton, 1942
10. Hartman, 1944a
11. Hartman, 1945
12. Hartman, 1947a
13. Hartman, 1951
14. Pearse and Williams, 1951
15. Wells, 1961
16. Mangum, 1962
17. Pettibone, 1963a
18. Wells, Wells, and Gray, 1964
19. Wells and Gray, 1964
20. McCloskey, 1970
21. Day, Field, and Montgomery, 1971
22. Foster, 1971

In the pages that follow, all the species recorded in these papers have been extracted and added to the records obtained from the present collections. For the sake of brevity, the authority for each record is shown by a number which refers to the list above. Thus a record by Stimpson (1856) is shown by the figure 1, while records of the 240 species obtained from the present collection are shown by an asterisk. It should be noted that such records were not all made on the Beaufort Shelf Transect. In addition to the 229 species collected on the transect, I dredged a few species at the entrance to Beaufort Inlet and collected others from the shores of Pivers Island. I also wish to thank Dr. Charlotte Mangum for the three species of Maldanidae from the shoals in Beaufort Sound, Dr. Larry McCloskey for many specimens from corals in 6.5-18 m near Lookout Lighthouse, Dr. Fred Grassle for specimens from 450 and 600 m on the continental slope, and Dr. Robert Menzies for three interesting abyssal species from 3,020 m off Beaufort. In all, 323 species are now known from North Carolina; of these 19 are new species, 2 are new subspecies, 16 are new records for the United States, and 105 are new records for North Carolina.

The new taxa and new records for the United States have been described and references to one or more good descriptions have been given for the rest. Some of the records are doubtful, but it was felt that so long as the authority for the record could be traced from the numbered list of papers above, even these doubtful records should be included for the sake of completeness. For the nonspecialist, the most useful items in this paper are the keys to the various families and the distribution lists of the species. These are as complete as possible. All the 323 recorded species have been included and a few other species known from adjacent areas have been added. They have been marked "no N.C. record" but they will probably be found there in the future. The keys make an initial separation of the genera whose names are given in parentheses and the specific characters of the species are then added. In some cases additional characters have been added in square brackets to exclude closely related species.

It is well known that the marine fauna of North Carolina is subtropical and this is equally true of the Polychaeta. Many tropical species extend northward from Florida and the Caribbean and many Carolinean species extend southward to the Gulf of Mexico. Then there are a small number of cold-water Virginian species which reach North Carolina. All of these are what might be called North American endemics, since many of the warmwater forms also occur on the Pacific coasts of Mexico and California. Polychaete worms are notoriously widespread and, in addition to these endemics, there are many species that extend across the Atlantic to Europe and North West Africa. Others are circumtropical or truly cosmopolitan.

Within the limits of North Carolina, there are faunistic differences between the sounds and

the open sea and between different depth zones on the continental shelf. In the shallow sounds around Beaufort, the bottom varies from mud to sand, there is little wave action and the estuarine waters are more productive than those of the open sea. The polychaete fauna of the sounds includes many subtropical species which occur at much deeper levels on the continental shelf; more than half of them are restricted to 10 m or more but here the specimens are much smaller. It was at first thought that the small specimens on the continental shelf were juveniles but when ovigerous females of the same size were found, it was realized that the polychaete fauna of the continental shelf is stunted. Whether this applies to other groups beside the Polychaeta is uncertain but one gains the impression that the water overlying the continental shelf is not very productive.

The distribution at different depths was obtained by an analysis of the records along the Beaufort Shelf Transect. The 10 stations of the transect were all sited on sand or sandy mud at increasing depth intervals and run in a straight line from the shore at Lookout Lighthouse to the continental slope some 40 miles out to sea. The environmental conditions at each station are given in Table 1 and may be used to supplement the depth range of the various species marked with an asterisk in the systematic section.

Polychaete worms represented 40% of the whole benthic fauna. While a few species, such as *Nephtys picta* were found at most of the stations, the majority of the species are grouped in well-marked zones at different depth intervals. Depth itself is not thought to be the limiting factor but rather the changes in other factors which are correlated with depth. There is a well defined but poor fauna on the open sandy shore; *Scolelepis squamata* is the dominant polychaete and does not occur elsewhere either on the sheltered sand banks in the sounds or at deeper levels in the open sea. The fauna of the Turbulent Zone between 3 and 20 m included several very common polychaetes such as *Paleanotus heteroseta*, *Goniadides carolinae*, *Magelona papillicornis*, and *Macroclymene zonalis*. The fauna of the Outer Shelf between 40 and 120 m included another group of common species, the most abundant being *Onuphis nebulosa* and *Owenia fusiformis*. On the Upper Slope between 120 and 200 m the commonest polychaetes were *Lumbrineris cruzensis*, *Scoloplos capensis*, *Chaetozone setosa*, and *Notomastus latericeus*.

Table 1. — The environmental conditions at each station along the Beaufort Shelf Transect.

Station No.	Location		Depth (m)	Substrate[1]	Bottom temperature (°C)
	Lat N	Long W			
1	34°37′	76°31′	0	coS	8-27
2	34°37′	76°31′	3	fS	8-24
3	34°36′	76°30′	5	fS	8-24
4	34°36′	76°29′	10	mS	9-23
5	34°34′	76°26′	20	coS	9-23
6	34°27′	76°06′	40	fS	11-25
7	34°24′	75°58′	80	fS	17-24
8	34°23′	75°55′	120	mS	14-21
9	34°23′	75°53′	160	fS	14-22
10	34°22′	75°52′	200	SM	12-21

[1] The symbols used for the substrate types are: co = coarse, f = fine, m = medium, S = sand, M = mud. Further details will be found in Day, Field, and Montgomery (1971).

Many scientists have helped me during the course of this research. Apart from those that I have mentioned earlier, I would like to thank Dr. C. G. Bookhout, the Director of the Duke University Marine Laboratory during 1965, my assistant Mrs. Mary Potts Montgomery, and many other friends in the laboratory. My particular thanks are due to Dr. Marian Pettibone for advice during the writing of this report and for the loan of many reprints and specimens from the U.S. National Museum.

Dr. Nancy Foster gave me helpful advice in advance of her publications on the Spionidae and Dr. Olga Hartman sent me many specimens for comparison. Further specimens were sent by Dr. David George of the British Museum and Dr. Helmet Zibrowius of Marseilles. To all these workers I tender my thanks. The collections were made during the tenure of a senior foreign scientist's fellowship and I gratefully acknowledge funds from grants 81-6264 and 81-6320 from the National Science Foundation.

Apart from certain reference specimens which were sent to the Duke University Marine Laboratory, the whole collection has been donated to the U.S. National Museum.

FAMILY APHRODITIDAE

Key to genera and species

1	Harpoon-shaped notosetae present. [Neurosetae spurred and longer prong feathered on inner margin. Felt poorly developed. (*Laetmonice*). Fifteen pairs of elytra]	*L. filicornis*
1′	No harpoon setae	2
2	Neurosetae stout, acicular, not spurred. Felt well developed	*Aphrodita* sp.
2′	Neurosetae long and spurred, often with spines on longer prong. Felt poorly developed. [Stouter notosetae not flattened and serrated]	*Aphrogenia* sp.

Laetmonice filicornis Kinberg, 1855

Laetmonice filicornis.-Fauvel, 1923: 36, Fig. 12 a-f. - Pettibone, 1963a: 11, Fig. 1. - Day, 1963b: 355.

Records.—Off Beaufort in 120-200 m (17, 21, *).

Distribution.—North Atlantic from Sweden and Greenland south to the West Indies; ? Australia; from the edge of the continental shelf to abyssal depths.

Aphrodita sp.

Remarks.—The two juveniles collected may belong to *Aphrodita hastata* Moore, reported by Pettibone (1963a) from the Gulf of St. Lawrence to Chesapeake Bay in 4-2,000 m.

Records.—Off Beaufort in 200 m (*).

Aphrogenia sp.

Figure 1a, b

Description.—Body 2 mm long, broadly oval. Dorsal felt poorly developed. No eyes, no ocular peduncles. Notosetae in a graded series; very fine ones forming felt, stouter cylindrical forms (Figure 1a) tapered to fine tips with a double row of granules near end. No barbed setae nor serrated sabre-setae. Neuroseta (Figure 1b) long, stout and spurred, with two to five spines on longer limb.

Remarks.—The single specimen is a juvenile, but the lack of barbed setae or sabre-setae distinguishes it from both *Hermonia* and *Pontogenia*. It appears to be close to *Aphrogenia alba* Kinberg, recorded from St. Thomas Island in the West Indies, but it lacks the stout notosetae with strongly curved tips figured by Kinberg (1858) for a 15-mm specimen.

Record.—One juvenile off Beaufort in 200 m (*).

FAMILY POLYNOIDAE

Key to genera and species

1	Lateral antennae inserted terminally at same level as median. Presetal and postsetal lips of neuropodia subequal	2
1′	Lateral antennae inserted ventrally below level of median. Presetal lip of neuropodia longer than postsetal. [Fifteen pairs of elytra covering most of short body]	6

2	Planktonic and probably a larval form. Cirrophores of dorsal cirri elongated (*Drieschia*)	*D. pellucida*
2′	Benthonic forms. Cirrophores not elongated	3
3	Body with about 26 segments and 12 pairs of elytra. Notosetae numerous (*Lepidonotus*)	4
3′	Body with more than 50 segments and 18 or more pairs of elytra. Notosetae few or absent	5
4	Margins of elytra fringed and surface with minute rounded microtubercles only	*L. sublevis*
4′	Margins of elytra fringed and surface with both macrotubercles bearing 3-5 blunt projections and numerous microtubercles	*L. variabilis*
5	A few fine notosetae. Neurosetae of middle segments include 1-2 giant setae. Elytra mottled, with a white central spot and irregularly arranged on posterior segments	*Lepidametria commensalis*
5′	No notosetae at all. Neurosetae include fine blunt forms superiorly and stouter bidentate forms inferiorly, but no giant setae. Elytra half brown, half white	*Lepidasthenia* sp.
6	Neurosetae with a large spinous pocket at base of blade. [(*Subadyte*). Notosetae stout with coarse serrations]	*S. pellucida*
6′	Neurosetae with basal serration smaller than distal ones	7
7	All neurosetae with unidentate tips	8
7′	Most neurosetae with bidentate tips	10
8	Neurosetae mostly tapered to fine hairlike tips. [Body with less than 40 segments (*Antinoella*). Anterior pair of eyes larger than posterior pair]	*A. sarsi*
8′	Neurosetae with strong, often curved tips	9
9	Body with 50-80 segments. Few (4-10) stout notosetae. Elytra translucent, not fringed, but covered with conical microtubercles	*Harmothoe (Hermadion) acanellae*
9′	Body with 35-49 segments. Notosetae numerous and finer than neurosetae. Elytra fringed with papillae and surface covered with microtubercles	*Gattyana cirrosa*
10	Elytra with a well developed marginal fringe	11
10′	Elytra without a marginal fringe or with merely a few small marginal papillae. [Surface covered with numerous microtubercles and a few ovoid macrotubercles at posterior margin. Eyes anteroventral]	*Harmothoe imbricata*
11	Elytron surface divided into polygonal areas bearing large pointed tubercles	*Harmothoe aculeata*
11′	Elytron surface not divided into polygonal areas and bears only microtubercles. [Notosetae few and stout.]	*Harmothoe trimaculata*

Drieschia pellucida Moore, 1903

Drieschia pellucida Moore, 1903: 794, pl. 55: Fig. 1-12. - Pettibone, 1963a: 22, Fig. 5h-j.

Records.—Planktonic in the Gulf Stream (17).
Distribution.—Gulf Stream from Bermuda to Massachusetts; 0-1,800 m.

Lepidonotus sublevis Verrill, 1873

Lepidonotus sublevis. - Hartman, 1942a: 22, Fig. 7-12. - Pettibone, 1963a: 18, Fig. 3 e.

Records.—Several records between 0 and 100 m off North Carolina (5, 11, 15, 17, 18, 21, *).
Distribution.—Massachusetts to Florida and the Gulf of Mexico; intertidal to 100 m. Often commensal with hermit crabs.

Lepidonotus variabilis Webster, 1879

Lepidonotus variabilis Webster, 1879: 205. - Hartman, 1951: 18 (notes).

Remarks.—This species is close to *L. tenuisetosus* Gravier from the Red Sea.
Records.—Many records from the shore to 18 m off North Carolina (3, 5, 11, 13, 15, 18, 20).
Distribution.—Virginia to the West Indies; intertidal to a few meters.

Lepidametria commensalis Webster, 1879

Lepidametria commensalis. - Seidler, 1924: 148. - Hartman, 1945: 10; 1951: 17. - Pettibone, 1963a: 19, Fig. 4 k.

Remarks.—In Day (1962: 634) I gave my reasons for regarding *Lepidametria* as a synonym of *Lepidasthenia.* Dr. Pettibone, who is making an intensive study of the Polynoidae, informs me that *Lepidametria* is a valid genus and in deference to her opinion I have not changed the name of *Lepidametria commensalis.*
Records.—Many records from the shore to 24 m off North Carolina (3, 5, 11, 13, 15, 17, 18).
Distribution.—Massachusetts to Florida and the Gulf of Mexico; intertidal to 24 m.

Lepidasthenia sp.

Figure 1e, f

Description.—Lateral antennae about equal to median and 1.7 times prostomial length. Occipital flap semicircular with a smooth margin. Elytra smooth, half brown and half pale, not large enough to cover middle of dorsum. Notosetae absent. Superior neurosetae (Figure 1e) slender, ending in blunt tips; inferior neurosetae (Figure 1f) stout and bidentate with a small secondary tooth. Ventral margins of parapodia without papillae.

Remarks.—Only a single incomplete specimen with 23 segments was obtained. It resembles *L. brunnea* Day, from South Africa in the pigment pattern on the elytra, in the absence of notosetae and in the shape of the neurosetae. It differs in having a well-developed occipital flap and the lack of a row of papillae on the ventral margins of the neuropodia. It may be noted that *Lepidametria brunnea* Knox, (1960: 91, Fig. 58-63) is also similar. The description of Knox's species was published later than that of Day.

Records.—Off Beaufort in 120 m; one specimen (*).

Subadyte pellucida (Ehlers, 1864)

Figure 1g

Scalisetosus pellucidus. - Fauvel, 1923: 74, Fig. 27 a-f.
Scalisetosus fragilis. - Day, 1967: 59, Fig. 1.7. g-k.
Subadyte pellucida. - Pettibone, 1969: Fig. 4a-e.

Description.—Body 8-15 mm long with about 45 segments, very fragile and mottled with greenish grey. Prostomium bilobed but without anterolateral peaks. Lateral antennae inserted ventrally at a lower level than median. All three antennae much longer than prostomium. Fifteen pairs of large, delicate and deciduous elytra covering entire body. Individual elytra with minute marginal papillae and conical microtubercles scattered over surface. Dorsal cirri long with slender tips. Notosetae fairly stout with a few coarse serrations and blunt tips. Neurosetae (Figure 1g) long and very trans-

parent with an enlarged serration forming a pocket at base of blade, numerous faint serrations along its length and a hooked tip with a minute secondary tooth.

Records.—Five small specimens from 40 to 120 m off Beaufort (*). This is a new record for the United States.

Distribution.—Eastern Atlantic from Scotland, Madeira Island, and Morocco to South Africa; Mediterranean; Indian Ocean; intertidal to 40 m.

Antinoella sarsi (Malmgren, 1865)

Antinoella sarsi. - Pettibone, 1963a: 30, Fig. 7e-j.

Records.—Two juveniles off Beaufort in 200 m (*).

Distribution.—Arctic and North Atlantic from Norway to the British Isles and Labrador to North Carolina; Pacific from the Bering Sea to North Japan; 5-2,000 m.

Harmothoe (Hermadion) acanellae (Verrill, 1881)

Polynoe acanellae.—Hartman, 1942a: 27, Fig. 27-31.

Harmothoe (Hermadion) acanellae. - Pettibone, 1963a: 28, Fig. 6 l, m.

Records.—North Carolina, ? depth (17).

Distribution.—North Atlantic from Denmark to West Greenland and south to North Carolina in 4-2,000 m associated with the coral *Acanella normani.*

Gattyana cirrosa (Pallas, 1766)

Gattyana cirrosa. - Fauvel, 1923: 49, Fig. 17 a-f. Pettibone, 1963a: 28, Fig. 5 b-d.

Records.—Beaufort, intertidal (5).

Distribution.—Arctic; North Atlantic from Norway to France and Hudson Bay to South Carolina; Pacific from the North Japan Sea and Bering Straits to Washington; intertidal to 1,153 m.

Harmothoe imbricata (Linnaeus, 1767)

Harmothoe imbricata. - Fauvel, 1923: 55, Fig. 18 f-l. - Pettibone, 1963a: 36, Fig. 7 a-d.

Records.—Intertidal in the Cape Hatteras area (18).

Distribution.—Arctic; North Atlantic from Norway south to the Mediterranean and Labrador to North Carolina; Pacific from the Bering Sea to southern California and Japan to the Yellow Sea; intertidal to 300 m.

Harmothoe aculeata Andrews, 1891

Harmothoe aculeata. Andrews, 1891a: 278, pl. 12: Fig. 1-5. - Hartman, 1945: 10. - 1951: 19. - Nonato and Luna, 1970a: 67, pl. 3: Fig. 26.

Records.—Several records from the shore and shallow dredgings off North Carolina (5, 7, 11, 13, 14, 15).

Distribution.—North Carolina to Florida and Brazil; intertidal to 69 m.

Harmothoe trimaculata (Treadwell, 1924)

Harmothoe trimaculata Treadwell, 1924: 6. - Hartman, 1938: 118, Fig. 38 a, 39 a, b; 1951: 19.

Records.—Cape Hatteras to Beaufort, intertidal to 70 m (18, 19).

Distribution.—North Carolina and West Indies; 0-70 m.

Harmothoe sp. A

Figure 1h, i

Description.—Body 3-4 mm long, with 21-23 segments and 10 pairs of elytra. Pigmentation characteristic with dark brown blotches on cirrophores of setigers 6 and 10. Prostomium bilobed but without cephalic peaks and anterior eyes well forward and ventral. Median antenna three times prostomial length, laterals ventral in origin and shorter than prostomium. Antennae and cirri not visibly papillose. Elytra

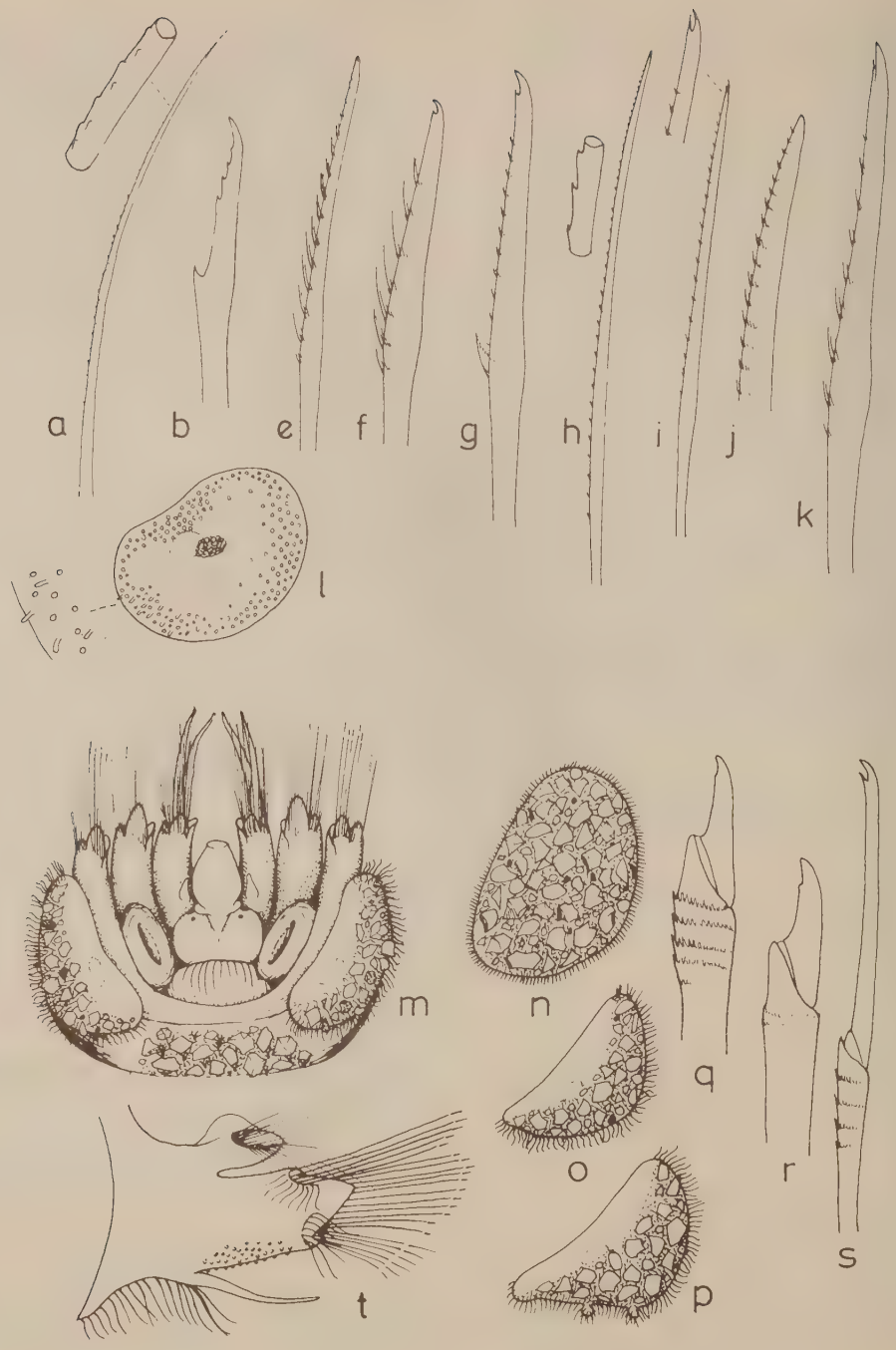

Figure 1.—*Aphrogenia* sp. a, stouter type of notoseta; b, neuroseta. (Figure c and d omitted.) *Lepidasthenia* sp. e, slender superior neuroseta; f, inferior neuroseta. *Subadyte pellucida* g, neuroseta. *Harmothoe* sp. A h, notoseta; i, neuroseta. *Harmothoe* sp. B j, notoseta; k, neuroseta; l, anterior elytron. *Psammolyce ctenidophora* n. sp. m, head; n, 1st elytron; o, 2d elytron; p, 6th elytron; q, superior falciger; r, middle falciger; s, inferior falciger; t, anterior view of parapodium.

delicate, without marginal fringes and surface with only a few weak tubercles bearing four to six spinules. Notosetae deciduous leaving only a stout aciculum in the notopodia; when present, notosetae very fine and serrated to their hairlike tips (Figure 1h). Neurosetae (Figure 1i) slender, slightly stouter than notosetae and bearing long blades ending in naked tips with two subequal teeth.

Remarks.—The size and number of segments shows that all specimens are juveniles. The very fine setae and pigmentation are quite distinctive.

Records.—Off Beaufort in 35 m (*).

Harmothoe sp. B

Figure 1j-l

Description.—Body pale in alcohol, 4.5 mm long with less than 25 setigers and 8-11 pairs of elytra. Prostomium with small cephalic peaks and anterior pair of eyes lateral. Lateral antennae half as long as prostomium. Antennae and dorsal cirri with short clavate papillae. Elytra (Figure 1l) mottled gray-green with a central dark spot, not fringed but with a few soft papillae and a scattering of hemispherical weakly chitinized microtubercles on surface. Notosetae (Figure 1j), stout and strongly serrated to their blunt, grooved ends. Neurosetae (Figure 1k), more slender than notosetae and all with bidentate tips.

Remarks.—These juvenile specimens may be *Harmothoe dearborni* Pettibone, but the neurosetae have a much longer secondary tooth and the body lacks a rusty red coloration.

Records.—Six juveniles off Beaufort in 35 m (*).

Distribution.—(of *H. dearborni*). On *Sargassum* weed floating off Massachusetts.

FAMILY POLYODONTIDAE

Key to genera and species

1	Anterior pair of eyes large and mounted on stalks. Three antennae. Branchial vesicles between anterior parapodia. Superior neurosetae not penicillate (paintbrush shaped) (*Polyodontes*)	*P. lupina*
1′	Anterior pair of eyes sessile like posterior pair. Three antennae. No branchial vesicles. Superior neurosetae not penicillate (*Eupanthalis*)	*E. kinbergi*

Polyodontes lupina (Stimpson, 1856)

Polyodontes lupina.—Hartman, 1945: 10; 1951: 19.

Records.—Beaufort, intertidal to 160 m (1, 5, 11, 13, *).

Distribution.—North Carolina; South Carolina; Gulf of Mexico; intertidal to 160 m.

Eupanthalis kinbergi (McIntosh, 1876)

Euarche tubifex Ehlers, 1887: 54, pl. 12: Fig. 1-7, pl. 13: Fig. 1.

Eupanthalis kinbergi. - Fauvel, 1923: 100, Fig. 38 i-q. - Day, 1967: 94, Fig. 1.17. a-f.

Records.—One specimen from 450 m off Beaufort (*).

Distribution.—Gulf of Mexico; North Atlantic (Adventure Bank); off Angola; Mediterranean; 64-1,000 m.

FAMILY SIGALIONIDAE

Key to genera and species

1	Body seldom longer than 10 mm. No cirriform branchiae on elytrophores (*Pholoe*). [Elytra without concentric growth lines. Forty-five segments or more]	*P. minuta*
1′	Body up to 200 mm long. Cirriform branchiae on elytrophores after first few segments	2
2	No median antenna; lateral antennae papilliform (*Sigalion*). [Elytra with 8-13 branching papillae on outer margin; one stylode on notopodium and two on neuropodium]	*S. arenicola*
2′	Median antenna present; lateral antennae indistinct and fused to base of tentacular segment	3
3	Compound neurosetae spinigerous with laddered blades ending in pointed tips. [Median antenna without ctenidia (*Leanira*). No eyes, no simple neurosetae; elytra without marginal papillae or lateral indentations]	*L. hystricis*
3′	Compound neurosetae mainly or entirely falcigerous with simple or multiarticulate blades ending in bidentate tips	4
4	Median antenna with a large ceratophore. Elytra and dorsum encrusted with sand (*Psammolyce*). [Ctenidia on ceratophore of median antenna]	*P. ctenidophora*
4′	Median antenna with a short ceratophore. Elytra not encrusted with sand (*Sthenelais*)	5
5	Eyes present. Usually a few simple bipectinate setae at superior edge of neuropodium	6
5′	Eyes absent. No simple neurosetae. [Elytra without markings]	*S. anocula*
6	External margins of elytra fringed with simple papillae, never notched	*S. boa*
6′	External margins of anterior elytra with a few irregular papillae and posterior ones with a notch	*S. limicola*

Pholoe minuta (Fabricius, 1780)

Pholoe minuta. - Fauvel, 1923: 120, Fig. 44 a-h. -Pettibone, 1963a: 46, Fig. 10 f, g. - Day, 1967: 100, Fig. 1. 18. a-f.

Records.—One specimen from 160 m off Beaufort (*).

Distribution.—Cosmopolitan; intertidal to 2,295 m.

Sigalion arenicola Verrill, 1879

Sigalion arenicola. - Pettibone, 1963a: 48, Fig. 11 a, b. - Nonato and Luna, 1970a: 72, pl. 4: Fig. 46-48.

Records.—Three specimens from 20 m off Beaufort (*).

Distribution.—Massachusetts to Georgia; Brazil; intertidal to 37 m in sand.

Leanira hystricis Ehlers, 1874

Leanira hystricis. - Fauvel, 1923: 118, Fig. 43 h-m. - Pettibone, 1970a: 8, Fig. 4.

Description.—Median antenna short and without ctenidia. Lateral antennae indistinct. probably fused to bases of tentacular segment. No eyes. Palps long with basal sheaths. A cirrophore but no dorsal cirrus on segment 3. Elytra without surface papillae, marginal fringes, or lateral indentations. Cirriform branchiae from segment 7 onwards. Notopodia with two long apical stylodes. Neuropodia with five long stylodes, two arising from posteroventral bract. No simple pectinate setae in neuropodia, all neurosetae being compound with spinigerous laddered blades.

Remarks.—Pettibone (1963a) and earlier workers recorded *Leanira hystricis* from Massachusetts to north of Puerto Rico. Pettibone (1970a) has revised the synonymy of *L. hystricis* and several other species and states that the record from Massachusetts refers to *L. robusta* Verrill and the record from north of Puerto Rico refers to *L. cirrata* (Treadwell). As noted above, the present specimens lack simple neurosetae which agrees with Pettibone's revised description of *L. hystricis* and distinguishes it from both *L. robusta* and *L. cirrata*. On the other hand, it should be noted that the presence or absence of labial lobes which Pettibone now regards as an important diagnostic character was not recorded.

Records.—Seven specimens from 200 m off Beaufort (*).

Distribution.—(According to Pettibone, 1970a) northeastern Atlantic; Iceland, United Kingdom, Azores; 957-2,640 m.

Psammolyce ctenidophora New Species

Figure 1m-t

Holotype.—USNM 43117.

Description.—Body incomplete with only 28 segments measuring 25 mm by 8 mm. Dorsum covered with coarse sand or shell fragments attached to elytra and mid-dorsum by branching adhesive papillae (Figure 1m). Ventrum and parapodial bases densely covered with segmental bands of long slender papillae alternating with narrower bands of small hemispherical papillae.

Prostomium (Figure 1m) rounded but sunken between anterior parapodia and dominated by the large swollen ceratophore of median antenna. Base of ceratophore with a pair of small ctenidial flaps; ceratostyle missing. Anterior pair of eyes much larger than posterior pair and directed forwards. Lateral antennae as biarticulate conical projections arising from dorsal bases of tentacular lobes and not visibly joined to prostomium. Tentacular lobes fused basally below ceratophore of median antenna and each bearing two tufts of slender, serrated capillary setae protected on medial side by cephalic sheaths. Dorsal tentacular cirri slightly longer than ventral ones. A large pedunculate facial tubercle above mouth and large prebuccal flanges on either side; palps missing.

Elytra on setigers 2, 4, 5, 7, 9 . . . 27, and 28 (broken end) and dorsal tubercles on intervening segments from setiger 3 onwards. First pair of elytra (Figure 1n) large, oval, without an incision and covering head. Subsequent elytra smaller and widely separated leaving dorsum bare apart from sand grains. Second pair of elytra (Figure 1o) triangular and without lappets but subsequent elytra (Figure 1p) somewhat produced medially and with small lappets on posterior margin. Exposed surfaces of all elytra covered with long papillae and adherent sand grains or shell fragments.

Parapodia (Figure 1t) similar throughout; those of setigers 2 and 3 without specialized features. Each notopodium short and stout with a presetal flap dorsally. Neuropodium larger, with scattered squat papillae and groups of long filiform papillae; three groups around neurosetae and fourth group at base of ventral cirrus. Notosetae slender and minutely serrated, many directed downwards between parapodia. Neurosetae of three types; a superior group of stout falcigers with well serrated shaft-heads (Figure 1q) and small blades with an indication of a secondary tooth; a middle group of stout falcigers with almost smooth shaft-heads (Figure 1r); an inferior group of slender falcigers with serrated shaft-heads and long bidentate blades (Figure 1s).

Remarks.—Species of the genus *Psammolyce* have been distinguished mainly on the shape of the elytra, some of which are incised while

others have long projecting lobes. As Willey (1905) and Potts (1909) have remarked, these features are variable for the elytra may change along the length of the body in a single specimen. For this reason, *P. ctenidophora* is named as a new species with hesitation. However, it does not agree with the species described by Fauvel (1923) from Europe, or those described by McIntosh (1885), Treadwell (1902), Augener (1906), Hartman (1939), Hartman (1942b) or Hartman (1965a) from the West Indies. The presence of ctenidial flaps on the peduncle of the median antenna of *P. ctenidophora* appears to be unique and the large pedunculate facial tubercle has not been noted on any other species.

Records.—One specimen off Beaufort on rock and sand in 20 m (*).

Sthenelais boa (Johnston, 1833)

Sthenelais boa. - Fauvel, 1923: 110, Fig. 41 a-l. -Pettibone, 1963a: 50, Fig. 10 a-d. - Day, 1967: 109, Fig. 1.20.f-l.

Records.—Several records between Cape Hatteras and Beaufort from the shore to 100 m (5, 7, 11, 13, 17, 18).

Distribution.—Cosmopolitan in temperate and tropical seas; intertidal to 150 m.

Sthenelais limicola (Ehlers, 1864)

Sthenelais limicola. - Fauvel, 1923: 113, Fig. 42 a-g. - Pettibone, 1963a: 51, Fig. 11 c-e. - Day, 1967: 111, Fig. 1.20. m-r.

Records.—Common off Beaufort in 20-80 m (17, *).

Distribution.—Atlantic from Norway to Spain and the Gulf of St. Lawrence to North Carolina; Mediterranean; South Africa; intertidal to 800 m.

Sthenelais sp.

Figure 2 a-e

Notes.—Apart from the typical specimens of *S. limicola* recorded above, 10 aberrant specimens were obtained which are closer to *S. minor* Pruvot and Racovitza as described by Fauvel (1923). In particular, there are no bipectinate simple setae in the neuropodia. The anterior elytra (Figure 2a) have no attached sand grains but bear a few conical microtubercles on the surface and a few simple papillae on the external margin. Posterior elytra (Figure 2b) have a small excision on the external margin. The feet (Figure 2c) and the compound neurosetae (Figure 2d, e) are identical with those of *S. limicola.*

According to Fauvel, *S. minor* lacks simple bipectinate neurosetae and the excision in the posterior elytra, both of which are characteristic of *S. limicola.* More material is required to decide whether these American specimens represent a new species or whether *S. minor* is a synonym of *S. limicola.*

Records.—Ten specimens off Beaufort in 20-80 m (*).

Sthenelais anocula New Species

Figure 2f-j

Sthenelais anocula Day, Field, and Montgomery, 1971: 113 (Nomen nudum)

Holotype.—USNM 43128; 9 paratypes, USNM 43129.

Description.—Body up to 35 mm long with about 60 segments and uniformly pale in alcohol. Prostomium (Figure 2g) rounded and without eyes. Median antenna with a pair of small bracts or ctenidia on ceratophore and an elongated ceratostyle tapering to a slender terminal filament. Lateral antennae not distinguished but presumably fused to base of tentacular segment which bears a ciliated cushion similar to those on later notopodia. Superior tentacular cirrus as long as median antenna but inferior cirrus much shorter. Two setigerous lobes each with a single terminal stylode. Palps missing and their sheaths united to presetal bracts on either side of mouth.

Setiger 3 with a dorsal tubercle but no dorsal cirrus. Elytra on segments 2, 4, 5, 7, 9 . . . , and alternate segments to 27th and all subsequent segments. Small cirriform branchiae on all elytrophores and dorsal tubercles from segment 4. Elytra broadly oval (Figure 2f), with few cushion-shaped papillae on surface, and about 15 simple digitiform marginal papillae; no external notch even on posterior elytra.

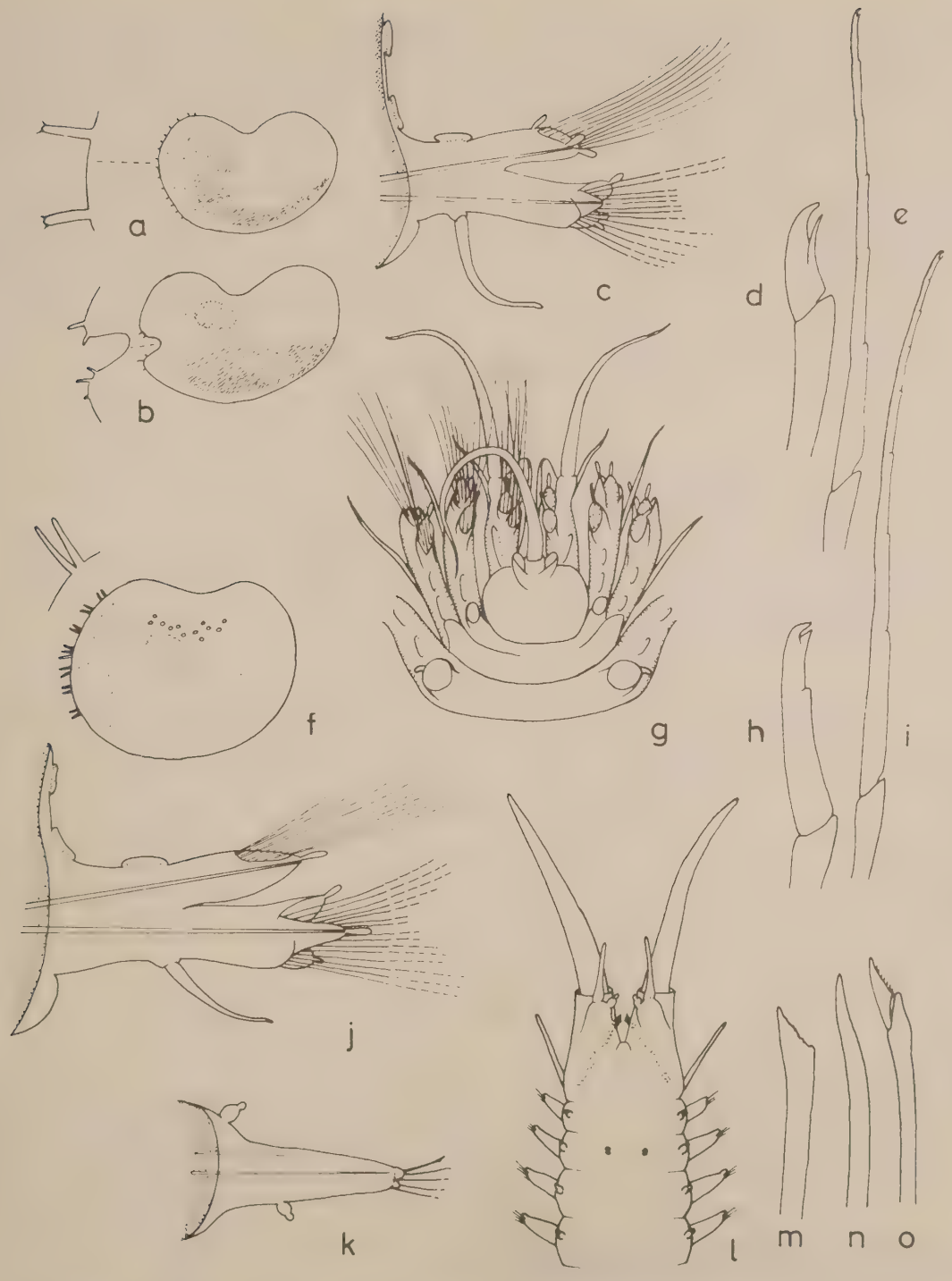

Figure 2.—*Sthenelais* sp. a, anterior elytron; b, posterior elytron; c, anterior view of foot; d, simple falciger; e, pluriarticulate falciger. *Sthenelais anocula* n. sp. f, elytron; g, head; h, short-bladed falciger; i, pluriarticulate falciger; j, anterior view of foot. *Pisione remota* k, 3d foot; l, anterior end; m, stout superior seta; n, slender superior seta; o, inferior seta.

Notopodia (Figure 2j) with three ciliated cushions dorsally, three terminal stylodes on first few feet but only one stylode from 10th foot. Neuropodia with three small perisetal bracts; one superior with an apical stylode, one anteroinferior without a stylode and one posteroinferior with an apical stylode. Third stylode at apex of setigerous lobe. Sides of parapodia without long papillae.

Notosetae as long, simple capillaries, minutely serrated on one margin. Neurosetae all compound, simple bipectinate setae being absent. Compound setae (Figure 2h, i) all with smooth shaft-heads; a few with short bidentate blades, many with long multiarticulate blades.

Remarks.—*S. anocula* is generally similar to *S. limicola* but is distinguished from the latter by the lack of eyes, the lack of simple bipectinate neurosetae and the absence of an incision on the posterior elytra.

Records.—Fifteen specimens on sandy mud 80-200 m off Beaufort (21, *).

FAMILY PALMRIDAE

Key to genera and species

1	Body elongate, completely covered by transverse rows of paleae. Prostomium concealed under a fold of skin (*Bhawania*). Paleae with about 20 ribs including 5 major beaded ones	*B. goodei*
1′	Body rectangular with right and left groups of paleae distinct. Prostomium visible between paleae (*Paleanotus*). Paleae with about 20 subequal beaded ribs	*P. heteroseta*

Bhawania goodei Webster, 1884

Bhawania goodei Webster, 1884: 308, pl. 7: Fig. 10-15. - Day, 1967: 118, Fig. 2.1. a-f.

Records.—Common on corals in 5-20 m off North Carolina (14, 20, *).

Distribution.—Circumtropical; intertidal to 30 m in rock crevices and coral.

Paleanotus heteroseta Hartman, 1945

Paleanotus heteroseta Hartman, 1945: 12, pl. 1: Fig. 1-6.

Records.—Common off Beaufort on sand at 4-20 m (11, 21, *).

Distribution.—North Carolina in 4-20 m.

FAMILY PISIONIDAE

Only one genus and species known from North Carolina.

Pisione remota (Southern, 1914)

Figure 2k-o

Praegeria remota Southern, 1914: 61, pl. 7, pl. 8: Fig. 15 a-k. - Fauvel, 1923: 124, Fig. 45 a-g.

Pisione remota. - Hartman, 1968: 181, Fig. 1-5.

Description.—Juveniles up to 15 mm long with slender bodies and long projecting parapodia. Prostomium (Figure 2l) inconspicuous and embedded in large peristome between bases of long, forwardly directed palps. Above them, two pairs of biarticulate tentacular cirri; inner, ventral pair minute and papilliform, outer dorsal pair long and slender. Peristomial acicula long and stout, their flanged ends projecting in front of mouth as supernumary jaws. Proboscis eversible with 14 marginal papillae and 2 pairs of weakly chitinized true jaws normally retracted back to setiger 4. Two fused pairs of

subdermal eyes at level of setiger 2. Setiger 1 with a small papilliform dorsal cirrus, a setigerous lobe and a long ventral cirrus directed forwards. Dorsal cirrus of setiger 2 not enlarged. Each normal foot (Figure 2k) with a minute biarticulate dorsal cirrus, a long setigerous lobe with two presetal lips and a ventral cirrus similar to dorsal one but more distal in origin. Setae of three types; superior one (Figure 2m) stout, simple, and obliquely truncate; second (Figure 2n) simple, with a slightly curved and pointed end; below this three compound setae (Figure 2o) with short falcigerous blades.

Remarks.—*P. remota* differs from the type species *P. oerstedi* Grube in lacking an elongate dorsal cirrus on setiger 2 and differs from *P. africana* Day in having all blades of the compound setae short.

Records.—Juveniles common off Beaufort in 10-20 m (21, *). This is a new record for the Atlantic coast of the United States.

Distribution.—Ireland; English Channel; Mediterranean; southern California; Pacific coast of Mexico; in 10-200 m.

FAMILY AMPHINOMIDAE

Key to genera and species

1	Notosetae in transverse palisades across dorsum. [Body stout and oval. Caruncle linear (*Euphrosine*)]	No N.C. record
1′	Notosetae in compact tufts	2
2	Branchiae with regular bipinnate branches. [Body oval with about 30 segments. Caruncle broad with pleated margins (*Chloeia*). Conspicuous red bars on dorsum when adult]	*C. viridis*
2′	Branchiae as irregularly branching tufts	3
3	Neuropodium small and suckerlike with few short, hooked setae (*Hipponoe*)	*H. gaudichaudi*
3′	Neuropodium well developed; setae numerous, not hooked	4
4	Neurosetae stout and acicular. Body large, stout, almost quadrangular in section (*Amphinome*). Caruncle small, cordate	*A. rostrata*
4′	Neurosetae normal, spurred. Body small, less than 30 mm. Ventrum flattened. Caruncle small or absent. [Branchiae not present on posterior segments]	5
5	Notosetae of setiger 1 include stout hooks (not easily seen). (*Paramphinome pulchella*)	No N.C. record
5′	Notosetae of setiger 1 without hooks. (*Pseudeurythoe*). [Caruncle rudimentary. Branchiae from setiger 3]	*P. ambigua*

Chloea viridis Schmarda, 1861

Chloeia euglochis Ehlers, 1887: 18, pl. 1: Fig. 1, 2, pl. 2: Fig. 1-8, pl. 3: Fig. 1-4.
Chloeia viridis. - Hartman, 1951: 29. - Nonato and Luna, 1970b: 65, Fig. 1, 2.

Notes.—Body up to 117 mm long with 36-39 segments. Dorsum with a median dorsal stripe in juveniles changing to violet brown segmental bars in adults.

Records.—Cape Hatteras area on *Sargassum* and off Beaufort in 40-120 m (18, *).

Distribution.—North Carolina; West Indies; Gulf of Mexico; Brazil; low tide to 120 m.

Hipponoe gaudichaudi Audouin and Milne-Edwards, 1830

Hipponoe gaudichaudi. - Fauvel, 1923: 132, Fig. 47 1-p. - Pettibone, 1963a: 57, Fig. 13 a, b.

Records.—Two specimens on driftwood with *Lepas*, off Beaufort (*).

Distribution.—Cosmopolitan in warm and tropical seas.

Amphinome rostrata (Pallas, 1776)

Amphinome pallasii. - Fauvel, 1923: 127, Fig. 46.
Amphinome rostrata. - Hartman, 1951: 22, pl. 4: Fig. 1. - Pettibone, 1963a: 59, Fig. 13 d, e. - Day, 1967: 123, Fig. 3.1. f-k.

Records.—Several records from driftwood cast ashore in North Carolina (5, 7, 11, 13, 17, 18, *).

Distribution.—Cosmopolitan in warm and tropical seas.

Paramphinome pulchella (Sars, 1872)

Paramphinome pulchella. - Pettibone, 1963a: 61, Fig. 13 f, g (with synonymy).
Paramphinome jeffreysii. - Hartman, 1965a: 58, pl. 1: Fig. b, c.

Records.—No North Carolina record, but known from south of Long Island and the Gulf of Mexico. (17).

Distribution.—North Atlantic from Norway to Denmark and Iceland to the Gulf of Mexico; from 37 to 5,500 m.

Pseudeurythoe ambigua (Monro, 1933)

Eurythoe ambigua Monro, 1933b: 6, Fig. 2.
Pseudeurythoe ambigua. - Hartman, 1945: 12.

Remarks.—*Pareurythoe* Gustafson and *Pseudeurythoe* Fauvel are very close. The main distinction is that in *Pareurythoe* the gills continue to the end of the body while in *Pseudeurythoe* they are limited to anterior segments. This, however, may be a function of size and most species of the *Pseudeurythoe* are small.

Records.—Beaufort, intertidal, and common at 20 m (11, 21, *).

Distribution.—Pacific coast of Panama; North Carolina; intertidal to 20 m.

FAMILY PHYLLODOCIDAE

Key to genera and species

NOTE.—In the tentacular formula used below, the symbol 1 = tapered tentacular cirrus; N = normal lamellar cirrus; 0 = absent (no cirrus or no setae); S = setae.

1	Two pairs of tentacular cirri. Only 4 antennae	2
1′	Three pairs of tentacular cirri. Only 4 antennae	5
1″	Four pairs of tentacular cirri. Four or 5 antennae	6
2	Two tentacular cirri on first segment. Prostomium flattened and body usually white (*Eteone*)	3
2′	One tentacular cirrus on first segment and one on second which also bears setae. Prostomium not flattened and body usually greenish (*Lugia*). [No dorsal cirrus on segment 3; formula: $1 + S\frac{1}{N} + S\frac{0}{N}$]	*L. rarica*

3	Setae present on segment 2; formula: $0\frac{1}{1}+ S\frac{0}{N}$	4
3′	No setae on segment 2; formula: $0\frac{1}{1}+ 0\frac{0}{N}$. [Dorsal cirri asymmetrical and broader than long]	*Eteone lactea*
4	Dorsal tentacular cirrus shorter than ventral one. Posterior dorsal cirri asymmetrical, longer than broad	*Eteone heteropoda*
4′	Dorsal tentacular cirrus as long as ventral one. Dorsal cirri almost symmetrical and as broad as long (*E. longa*)	No N.C. record
5	Three tentacular cirri on three segments with setae from second; formula: $1 + S\frac{1}{N}+ S\frac{1}{N}$. (*Protomystides*). Dorsal cirri long and hastate	*P. bidentata*
5′	Three tentacular cirri on two segments with setae from third; formula: $1 + 0\frac{1}{1}+ S\frac{0}{N}$. (*Hesionura*). Dorsal cirri fusiform and much shorter than ventrals	*H. elongata*
6	Four frontal antennae and a similar middorsal one (*Eulalia*)	7
6′	Four frontal antennae but no middorsal one, a minute occipital papilla sometimes present	10
7	Setae on both second and third tentacular segments; formula: $1 + S\frac{1}{1}+ S\frac{1}{N}$. Setigerous lobe bluntly rounded apically	8
7′	No setae on any tentacular segment; formula: $1 + 0\frac{1}{1}+ 0\frac{1}{N}$. Setigerous lobe with a pointed superior projection apically	*E. (Pterocirrus) macroceros*
8	First tentacular segment not visible dorsally, second and third distinct (subgenus *Eumida*). Proboscis almost smooth	*E. (Eumida) sanguinea*
8′	All three tentacular segments distinct and separate (subgenus *Eulalia*). Proboscis densely covered with papillae	9
9	Dorsum yellow with a pair of lateral stripes. Dorsal cirri bluntly oval	*E. (Eulalia) bilineata*
9′	Dorsum uniformly green. Dorsal cirri hastate, pointed	*E. (Eulalia) viridis*
10	Prostomium with a median posterior projection embraced by broad "shoulders" formed of fused first and second tentacular segments. [Setae from third tentacular segment; formula: $1 + 0\frac{1}{1}+ S\frac{1}{N}$ (*Paranaitis*)]	11
10′	Prostomium truncate or notched posteriorly. First and second tentacular segments not forming broad "shoulders". (*Phyllodoce*)	12
11	Dorsal cirri reniform	*Paranaitis kosteriensis*
11′	Dorsal cirri asymmetrically oval	*Paranaitis speciosa*

12 Prostomium truncate posteriorly without an occipital papilla. Tentacular segments 1 and 2 fused; setae from second; formula: $1 + S\frac{1}{1} + S\frac{1}{N}$. [Dorsal cirri cordate] 13

12′ Prostomium notched posteriorly with a minute occipital papilla. Tentacular segments all separate though first obscure dorsally; no setae on any tentacular segment; formula: $1 + 0\frac{1}{1} + 0\frac{1}{N}$ 14

13 Body and dorsal cirri greenish yellow. Dorsal tentacular cirri of second and third segments questionably flattened in section ..... *Ph. (Nereiphylla) fragilis*

13′ Body and dorsal cirri red. All tentacular cirri rounded in section ..... *Ph. (Gentyllis) castanea*

14 Ventral cirri long and tapered to points. Dorsum greenish brown in adults and barred with brown in juveniles ..... *Ph. (Anaitides) mucosa*

14′ Ventral cirri oval with abruptly pointed tips. Dorsum greenish blue ..... *Ph. (Anaitides) groenlandica*

15 Setigerous lobe pointed. "Neck" dusky. [Ventral cirri long, slender, and pointed] ..... *Ph. (Anaitides) longipes*

15′ Setigerous lobe blunt. "Neck" not dusky 16

16 Ventral cirri long and tapered. Base of proboscis with numerous papillae 17

16′ Ventral cirri oval with blunt tips anteriorly, becoming abruptly pointed posteriorly. Base of proboscis with six regular rows of lateral papillae ..... *Ph. (Anaitides) madeirensis*

17 Dorsum green with dark intersegmental cross bars ..... *Ph. (Anaitides) arenae*

17′ Dorsum green with median dark stripe ..... *Ph. (Anaitides) panamensis*

Lugia rarica Uschakov, 1958

Figure 3g-j

Lugia rarica Uschakov, 1958: 204, Fig. 1 A-C

Description—Body vermiform, 18 mm long by 1.5 mm wide for 84 segments. Eggs green; dorsal cirri faintly red in alcohol. Prostomium (Figure 3g) as broad as long, rounded in front, with small lateral eyes but no occipital papilla. Proboscis diffusely papillose. Tentacular segments well developed and separate. Tentacular formula $1 + S\frac{1}{N} + S\frac{0}{N}$, there being tentacular cirri on segments 1 and 2 but none on 3. V_2 and V_3 both lamellar but V_2 larger than V_3. Dorsal cirri of normal body segments (Figure 3h) all oval but slightly longer posteriorly. Setigerous lobes blunt; ventral cirri similar to dorsal ones but smaller. Setae (Figure 3i, j) with long, almost smooth blades and denticulate shaft-heads bearing a curved tooth on one side.

Remarks.—Two specimens were obtained, the larger being an ovigerous female. As compared with Ushakov's original figures, the prostomium is shorter and the second tentacular cirrus (D_2) is shorter. Again Ushakov's Figure 1 C shows a seta with a more coarsely serrated blade and no tooth on the shaft-head. However, this feature is only visible under oil-immersion and the lack of a dorsal cirrus on the third segment is characteristic and immediately separates *L. rarica* from the type species *L. pterophora* (Ehlers).

Records.—Two specimens from muddy sand in 200 m off Beaufort (*). This is a new record for the United States.

Distribution.—Kamchatka in 5,070 m.

Eteone lactea Claparède, 1868

Eteone lactea. - Fauvel, 1923: 175, Fig. 63 a-d. -Pettibone, 1963a: 70, Fig. 16 a-c.

Records.—Off North Carolina; intertidal to 28 m (11, 13, 17, 18).

Distribution.—Atlantic from the Shetland Islands to the North Sea and the Gulf of St. Lawrence to Florida; Mediterranean; intertidal to 200 m.

Eteone heteropoda Hartman, 1951

Eteone heterpoda Hartman, 1951: 31, pl. 9: Fig. 1-8. - Pettibone, 1963a: 72, Fig. 16 d.

Records.—Off Beaufort in 10-200 m (15, *).

Distribution.—Maine to North Carolina and the Gulf of Mexico; intertidal to 18 m.

Protomystides bidentata Langerhans, 1879

Figure 3a-f

Mystides (Protomystides) bidentata. - Southern, 1914: 71, pl. 8: Fig. 17 a, b.

Protomystides bidentata. - Bergström, 1914: 184. -Hartman, 1965a: 62.

Description.—Body threadlike, greenish yellow, about 12 mm long by 0.1 mm. Prostomium (Figure 3a) elongate, slightly broader at truncate posterior end. Four tapered and subequal antennae, a pair of indistinct eyes, no occipital papilla. Proboscis diffusely papillose. Three well-developed and separate tentacular segments bearing three tentacular cirri and setae from second. Formula $1 + S\frac{1}{N} + S\frac{1}{N}$. Ventral cirrus of second segment (V_2) lamellar but tapered distally and longer than V_3. Normal parapodia (Figure 3b) with a long, blunt, setigerous t93, *an elongated oval dorsal cirrus* and a similar but smaller ventral cirrus. About eight spinigerous setae per foot; shaft-heads (Figure 3c, d) symmetrical and serrated; blades (Figure 3e, f) grading in length.

Remarks.—As Southern (1914) has remarked, the fact that tentacular cirrus V_2 is longer and more tapered than V_3 makes it difficult to separate *Protomystides* from *Phyllodoce.*

Records.—One specimen off Beaufort in 200 m (*).

Distribution.—Warm North and tropical Atlantic; Mediterranean; in 10-4,950 m.

Hesionura elongata (Southern, 1914)

Figure 3k-m

Mystides (Mesomystides) elongata Southern, 1914: 74, pl. 5: Fig. 12.

Mystides (Pseudomystides) elongata. - Fauvel, 1923: 182, Fig. 66 d-g.

Mystides elongata. - Renaud, 1956: 10.

Eteonides elongata. - Hartmann-Schröder, 1963: 216, Fig. 21-23.

Hesionura elongata. - Hartman, 1965b: 18 (catalogue).

Description.—Body threadlike, very slender, brownish green, about 15 mm long. Prostomium (Figure 3k) about twice as long as broad, with two pairs of frontal antennae and indistinct brown eyespots. No median antenna. Proboscis with numerous dark brown papillae. Three pairs of tentacular cirri on first and second segments. Both tentacular segments distinct, separate and without setae. Third segment without a dorsal cirrus but with setae. Tentacular formula: $1 + 0\frac{1}{1} + S\frac{0}{N}$. First tentacular cirrus cylindrical and tapered, about 1.5 times segmental breadth, second dorsal cirrus (D_2) similar but slightly longer, second ventral cirrus (V_2) short, only slightly longer than ventral cirri of subsequent segments. Normal parapodia (Figure 3l) with short, fusiform dorsal cirri, bluntly conical setigerous lobes longer than dorsal cirri but shorter than the very long fusiform ventral cirri. Setae (Figure 3m) four or five in number with bifid or even trifid shaft-heads and short, knife-shaped blades with deeply serrated edges. Pygidium with two very long slender anal cirri.

Remarks.—The blades of the setae fall off easily and this has given rise to Southern's statement, repeated by Fauvel, that simple setae

are present. Hartmann-Schröder (1963) reviewed the synonymy of the genus *Mystides* and its subgenera and showed that these names could not be used for Southern's species. She referred it to a *Eteonides* Hartmann-Schröder but this in turn is a synonym of *Hesionura* Hartmann-Schröder.

Records.—Eleven specimens from 10 to 200 m off Beaufort (*).

Distribution.—Ireland; Bimini Islands; in 10-20 m.

Eulalia (Pterocirrus) macroceros Grube, 1860

Eulalia (Pterocirrus) macroceros. - Fauvel, 1923: 167, Fig. 60 d-g (*partim*). - Day, 1960: 301, Fig. 5 g-i; 1967: 152, Fig. 5.4. a-c.

Description. - Body up to 20 mm long, rather broad, greenish. Prostomium bilobed posteriorly with a brownish swelling between the lobes. Eyes large; median antenna long and well forward. Proboscis with a narrow ring of elongate papillae basally but mainly smooth distally. First tentacular segment mainly fused to prostomium; second and third segments separate but without setae. Four pairs of tentacular cirri; tentacular formula: $1 + 0\frac{1}{1} + 0\frac{1}{N}$ but second ventral cirrus (V_2) flattened on one margin. Normal body segments with cordate dorsal cirri; superior part of setigerous lobes slightly produced and ventral cirri slightly pointed. Setae with markedly striate shaft-heads and long blades.

Records.—Common on coral in 6.5-18 m off Beaufort (20, *). This is a new record for the Atlantic coast of the United States.

Distribution.—Mediterranean; Morocco to Senegal; South Africa; Washington; 5 to 30 m.

Eulalia (Eumida) sanguinea (Oersted, 1843)

Eulalia (Eumida) sanguinea. - Fauvel, 1923: 166, Fig. 59 f-k. - Day, 1967: 155, Fig. 5.5. a-c.
Eumida sanguinea. - Pettibone, 1963a: 88, Fig. 21 a, b. - Hartman, 1968: 275, Fig. 1-3.

Records.—Several records between Cape Hatteras and Beaufort from the shore to 40 m (3, 11, 13, 15, 17, 18, 20, 21, *).

Distribution.—Cosmopolitan from cold temperate to subtropical seas; intertidal to 600 m.

Eulalia bilineata (Johnston, 1840)

Eulalia bilineata. - Fauvel, 1923: 162, Fig. 58 a-e. - Pettibone, 1963a: 86, Fig. 20. - Hartman, 1968: 261, Fig. 1, 2.
Eulalia (Hypoeulalia) bilineata. - Day, 1967: 164, Fig. 5.4. k-m.

Records.—North Carolina, intertidal (17, *).

Distribution.—Arctic; North Atlantic from Norway to the English Channel and Nova Scotia to North Carolina; South Africa; Pacific from North Japan Sea to the Yellow Sea and Vancouver Island to southern California; intertidal to 2,000 m.

Eulalia viridis (Linnaeus, 1767)

Eulalia viridis. - Fauvel, 1923: 160, Fig. 57 a, b. -Pettibone, 1963a: 85, Fig. 19. - Hartman, 1968: 267, Fig. 1-3.

Records.—Cape Hatteras to Beaufort, intertidal (18).

Distribution.—Arctic; Atlantic from Norway to Cape Verde Island and Iceland to North Carolina; Pacific from northern Japan to China and Alaska to Panama; ?Indian Ocean; intertidal to 200 m.

Paranaitis kosteriensis (Malmgren, 1867)

Anaitis kosteriensis. - Bergström, 1914: 156, pl. 1: Fig. 1, text Fig. 52a-c.
Phyllodoce (Anaitis) kosteriensis. - Fauvel, 1923: 157, Fig. 56 a-c.
Paranaitis kosteriensis. - Pettibone, 1963a: 77, Fig. 17 d.

Records.—One small specimen from 160 m off Beaufort (*).

Distribution.—North Atlantic from Sweden to Ireland and Labrador to New England; 10-2,000 m.

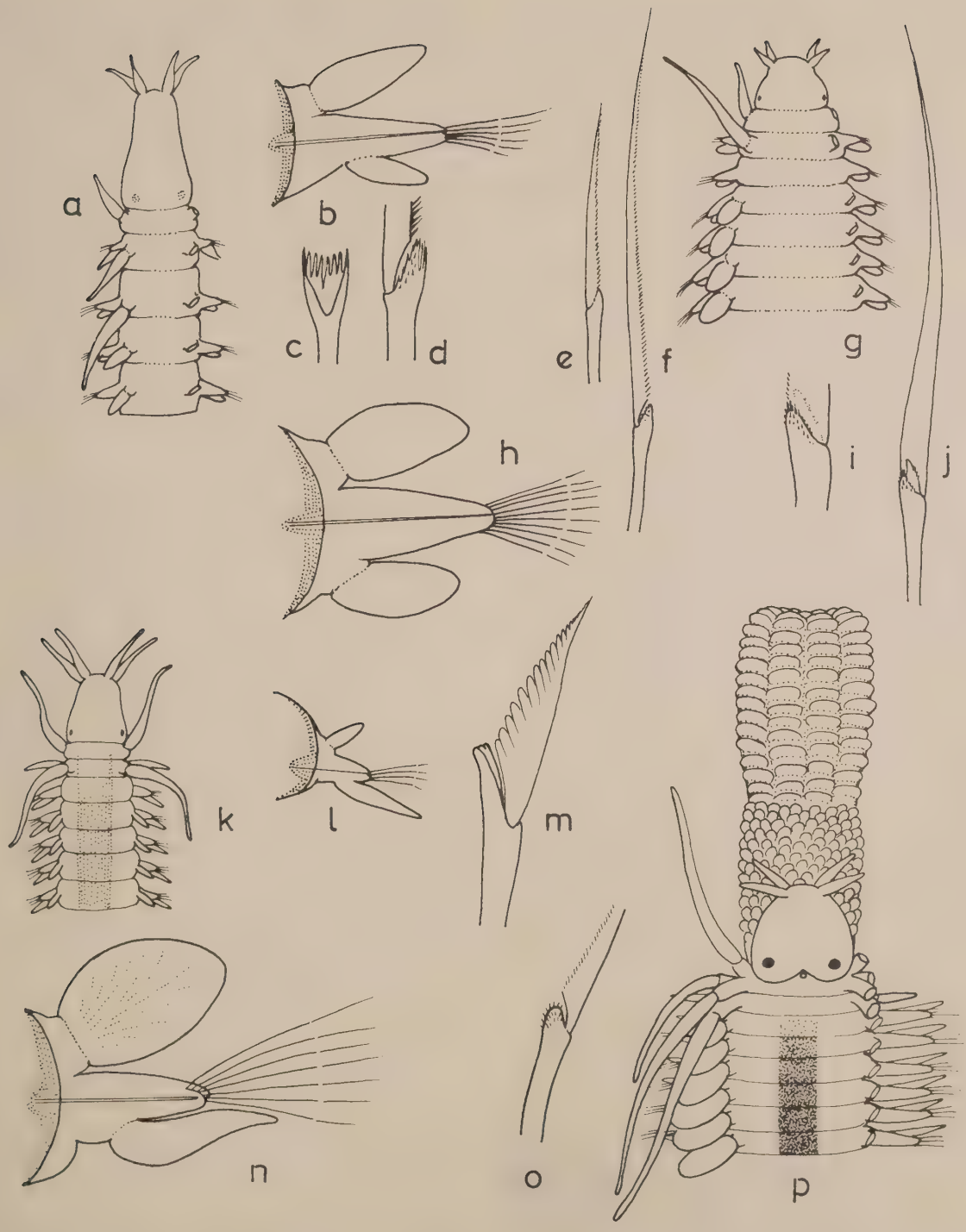

Figure 3.—*Protomystides bidentata* a, anterior end; b, foot; c, superior view of shaft-head with blade removed; d, lateral view of shaft-head; e, inferior seta; f, superior seta. *Lugia varica* g, anterior end; h, foot; i, shaft-head of seta; j, seta. *Hesionura elongata* k, anterior end; l, foot; m, seta. *Phyllodoce panamensis* n, foot; o, shaft-head of seta; p, anterior end.

Paranaitis speciosa (Webster, 1880)

Paranaitis speciosa. - Pettibone, 1963a: 75, Fig. 17 a.

Records.—One small specimen from 20 m off Beaufort (*).

Distribution.—Maine to Chesapeake Bay; intertidal to 183 m.

Phyllodoce (Nereiphylla) fragilis Webster, 1879

Phyllodice [sic] *fragilis* Webster, 1879: 14, pl. 3: Fig. 32-37.
Phyllodoce fragilis. - Hartman, 1942b: 111.
Nereiphylla fragilis. - Hartman, 1945: 14, pl. 2: Fig. 1-4.
[*Non*] *Nereiphylla fragilis*. - Hartman, 1951: 34.

Remarks.—According to Bergström (1914: 102), *Nereiphylla* Blainville and *Genetyllis* Malmgren are very similar, the main distinction being that in *Nereiphylla* the dorsal tentacular cirri of segments 2 and 3 are not rounded in section as they are in *Genetyllis* but definitely flattened so as to form slender lancetlike blades. When describing *Ph. (Nereiphylla) fragilis*, neither Webster nor Hartman mention that any of the tentacular cirri are flattened and give the impression that they are cirriform. While I do not feel that this character, which may be due to the method of preservation, is worthy of generic status, I feel that further changes in the name should be avoided until fresh or preferably living specimens are examined.

Records.—Many records from the shore to 40 m between Cape Hatteras and South Carolina (3, 5, 11, 14, 15, 18, 19, 20).

Distribution.—Virginia to South Carolina; intertidal to 40 m.

Phyllodoce (Genetyllis) castanea (Marenzeller, 1879)

Genetyllis castenea. - Bergström, 1914: 158, Fig. 53. - Hartman, 1968: 281, Fig. 1, 2.
[?] *Nereiphylla fragilis*. - Hartman, 1951: 34.
Phyllodoce (Genetyllis) castanea. - Day, 1967: 149 (*non* Fig. 5.3. d).

Remarks.—As noted above, *Genetyllis* has cylindrical tapered tentacular cirri. In comparison with the closely related *Ph. (N.) fragilis*, *Ph. (G.) castanea* has a shorter, broader body which is orange, not yellowish green and the dorsal cirri are red. The tentacular cirri are shorter and stouter and the dorsal cirri, though cordate, are more pointed. Possibly the record by Hartman (1951) of *Nereiphylla fragilis* from Florida and the Gulf of Mexico with clavate to cirriform tentacular cirri and dorsal cirri deep purple when preserved should be referred to *Ph. (G.) castanea*.

Records.—Two specimens from coral in 20 m off Beaufort (*).

Distribution.—In warm and tropical waters of all oceans; intertidal to 30 m.

Phyllodoce (Anaitides) mucosa Oersted, 1843

Phyllodoce (Anaitides) mucosa. - Fauvel, 1923: 152, Fig. 54 a-e. - Pettibone, 1963a: 81, Fig. 18 f-g.
Anaitides mucosa. - Hartman, 1968: 235, Fig. 1, 2.

Note.—The eight specimens from Beaufort are all juveniles less than 30 mm long. They agree with the descriptions of Fauvel and Pettibone in all respects except that the papillae at the base of the proboscis are more numerous with approximately 10 irregular rows on each side instead of 6.

Records.—Off Beaufort and North Carolina in 80-160 m (*).

Distribution.—Arctic and the North Atlantic from Denmark to West Africa and Hudson Bay to Mexico; California; intertidal to 400 m.

Phyllodoce (Anaitides) groenlandica Oersted, 1843

Phyllodoce (Anaitides) groenlandica. - Fauvel, 1923: 153, Fig. 54 f-i. - Pettibone, 1963a: 80, Fig. 18 e.

Records.—Off North Carolina; intertidal to 1,585 m (17).

Distribution.—Arctic; North Atlantic from Norway to the English Channel and Hudson

Bay to North Carolina; North Pacific from the Bering Sea to northern Japan and southern California; intertidal to 1,700 m.

Phyllodoce (Anaitides) longipes Kinberg, 1866

Phyllodoce (Anaitides) longipes. - Day, 1963a: 394, Fig. 3 d-f; 1967: 144, Fig. 5.2. a-c.
Anaitides longipes. - Hartman, 1968: 229, Fig. 1-3.

Description.—Body about 25 mm long; color greenish; a distinctive dusky "neck" immediately behind the tentacular cirri and three rows of fainter spots on subsequent segments. Prostomium elongate-cordate with four frontal antennae and a minute occipital papilla. One pair of dark eyes. First tentacular segment not visible dorsally, second and third distinct and separate though without setae. Four pairs of long cylindrical tentacular cirri; tentacular formula: $1 + 0\frac{1}{1} + 0\frac{1}{N}$. Dorsal cirri broadly oval, almost circular anteriorly. Setigerous lobes long, superior part of presetal lip pointed and projecting well below inferior part. Ventral cirri long, slender and pointed. Setae with shaft-heads minutely striated.

Records.—Eight specimens on sand in 20-40 m off Beaufort (21, *). This is a new record for the Atlantic coast of the United States.

Distribution.—North Carolina; South Africa; California; Chile; intertidal to 40 m.

Phyllodoce (Anaitides) madeirensis Langerhans, 1880

Phyllodoce (Anaitides) madeirensis. - Fauvel, 1923: 150, Fig. 23 d-h. - Day, 1967: 145, Fig. 5.2. d-g.
Anaitides madeirensis. - Nonato and Luna, 1970b: 66, Fig. 5-8.

Description.—Body up to 100 mm long; bright green when alive but fading in alcohol. Prostomium cordate with a deep posterior notch and an occipital papilla. Four frontal antennae and a pair of dark eyes. Base of proboscis with six lateral rows of papillae with about 11 papillae per row. Sometimes a median row of four or five. Distal part of proboscis with six lumpy ridges. First tentacular segment not visible dorsally, second and third distinct and separate. Four long, cylindrical tentacular cirri; tentacular formula: $1 + 0\frac{1}{1} + 0\frac{1}{N}$. Dorsal cirri hastate anteriorly, becoming rhomboidal on middle segments. Setigerous lobes apically blunt. Ventral cirri oval with blunt tips anteriorly but pointed tips posteriorly. Setae with strongly serrated shaft-heads.

Remarks.—The description of *Phyllodoce oculata* by Ehlers (1887: 135, pl. 40: Fig. 4-6) from Florida suggests that this species is a synonym of *Ph. madeirensis.* The only doubtful point is whether *Ph. oculata* lacks setae on the third tentacular segment. Augener (1925), who re-examined the type of *Lopadorhynchus erythrophyllus* Schmarda, from Jamaica, states that it is identical with *Ph. oculata* although I feel that the color as described and figured by Schmarda is quite different from that of *Ph. oculata* or *Ph. madeirensis.* If the three species are really identical, Schmarda's name would have priority. A reexamination of the types is required.

Records.—Two specimens from coral in 10 m off Beaufort (*).

Distribution.—Cosmopolitan in warm and tropical seas; intertidal to 200 m.

Phyllodoce (Anaitides) arenae Webster, 1880

Phyllodoce arenae Webster, 1880: 105; 1886: 133, pl. 5: Fig. 10-12.
Phyllodoce (Anaitides) arenae. - Pettibone, 1963a: 82, Fig. 18 a-c.

Remarks.—This species is common in the cold New England waters and is close to *Ph. panamensis* from warmer waters farther south. Both have ventral cirri pointed and longer than the setigerous lobes but differ in the pigment pattern; *Ph. (A.) arenae* has spindle-shaped intersegmental crossbars while *Ph. panamensis* has a dorsal stripe.

Records.—Six specimens in 20-200 m off Beaufort (*).

Distribution.—Maine to New Jersey; intertidal to 194 m.

Phyllodoce (Anaitides) panamensis Treadwell, 1917

Figure 3n-p

Phyllodoce (Anaitides) panamensis. - Monro, 1933b: 24, Fig. 11 a, b.

Description.—Body slender, up to 107 mm long; color greenish with a dark median dorsal stripe and a faint ventral one. Prostomium (Figure 3p) cordate with four frontal antennae and a minute occipital papilla. Base of proboscis completely covered with compressed papillae irregularly arranged. First tentacular segment not visible dorsally, second and third distinct and separate. Four pairs of long cylindrical tentacular cirri but no setae; tentacular formula: $1 + 0\frac{1}{1} + 0\frac{1}{N}$. Dorsal cirri (Figure 3n) large and oval; setigerous lobes blunt; ventral cirri slender and pointed, far longer than setigerous lobes. Setae (Figure 3o) with faintly striated shaft-heads.

Remarks.—*Ph. panamensis* is very close to *Ph. arenae* differing mainly in the color pattern; possibly it is no more than a subspecies of *Ph. arenae.*

Records.—Two specimens from 80 to 120 m off Beaufort (*).

Distribution.—Panama; 10 m.

FAMILY PILARGIDAE

Key to genera and species

1	Prostomium with three antennae. Notosetae always represented by a stout acicular seta	2
1′	Prostomium with two antennae. Notosetae either absent or represented by a stout hook	3
2	Notopodial acicular seta in the form of a hook. Antennae long. (*Sigambra*). [Notopodial hook appearing on setiger 14-25]	*S. bassi*
2′	Notopodial acicular seta straight. Antennae short (*Synelmis*). [Dorsal cirrus of first setiger twice as long as subsequent ones]	*S. albini*
3	Notosetae absent. (*Pilargis*)	No N.C. record
3′	Notosetae represented by a stout hook. [Dorsal and ventral cirri small or absent (*Cabira*)]	No N.C. record

Sigambra bassi (Hartman, 1945)

Ancistrosyllis bassi Hartman, 1945: 15; 1947b: 501, pl. 61: Fig. 1-7; 1951: 36, pl. 11: Fig. 1-6.

Sigambra bassi.-Pettibone, 1966: 186, Fig. 16.-Hartman, 1968: 389, Fig. 1-5.

Records.—Beaufort Sound, intertidal to a few meters (11, 12, 13, 18).

Distribution.—North Carolina to Florida; central to southern California; intertidal to 33 m.

Synelmis albini (Langerhans, 1881)

Ancistrosyllis rigida. - Fauvel, 1919: 337, Fig. 1 a-e. - Hartman, 1947b: 498, pl. 62: Fig. 1-7. - Day, 1967: 215.

Synelmis albini. - Pettibone, 1966: 191, Fig. 19-21. - Hartman, 1968: 393, Fig. 1-5. - Nonato and Luna, 1970b: 68, Fig. 10-14.

Records.—One juvenile off Beaufort in 80 m (*).

Distribution.—Circumtropical and extends from Brazil to North Carolina; southern California; intertidal to 2,200 m.

FAMILY HESIONIDAE

Key to genera and species

1	Eight pairs of tentacular cirri; [3 antennae. Proboscis with marginal papillae but no jaws. Notopodium vestigial with few setae (*Gyptis*)]	*G. vittata*
1′	Six pairs of tentacular cirri	2
2	A median and two lateral antennae. [Proboscis with marginal papillae (*Ophiodromus*)]	*O. obscurus*
2′	No median antenna, only two laterals	3
3	Palps biarticulate. Notopodium reduced to an aciculum in dorsal cirrophore and usually a few setae (*Nereimyra*)	*N. punctata*
3′	Palps not articulated. Notopodium a small but distinct lobe on dorsal cirrophore bearing several setae (*Parahesione luteola*)	No. N.C. record

Gyptis vittata Webster and Benedict, 1887

Gyptis vittata. - Pettibone, 1963a: 106, Fig. 28 c, d.

Records.—Cape Hatteras area, intertidal; off Beaufort in 10-20 m (18, *).

Distribution.—Maine to North Carolina; intertidal to 55 m.

Ophiodromus obscurus (Verrill, 1873)

Podarke obscura. - Pettibone, 1963a: 104, Fig. 28 a, b.

Remarks.—Dr. Pettibone, in a personal communication, maintains that *Podarke* Ehlers should not be regarded as a synonym of *Ophiodromus* Sars since the type species of *Podarke*, (*P. agilis*) has nearly uniramous parapodia, while the type species of *Ophiodromus*, (*O. vittatus* Sars = *O. flexuousus* Della Chiaje) has parapodia equally biramous. However both genera have three antennae and six pairs of tentacular cirri in contrast to *Gyptis*, *Nereimyra*, and *Parahesione* and, as noted earlier (Day, 1967), I agree with Dr. Hartman that *Podarke* is a synonym of *Ophiodromus*. The number of setae in the notopodia is, I feel, of specific but not generic importance.

Records.—Many records between Cape Hatteras and Beaufort; intertidal to 40 m (5, 11, 13, 15, 17, 18, 20, *)

Distribution.—Massachusetts to the West Indies and the Gulf of Mexico; intertidal to 840 m.

Nereimyra punctata (Müller, 1776)

Castalia punctata. - Fauvel, 1923: 24, Fig. 89 f-k.
Nereimyra punctata. - Pettibone, 1963a: 107, Fig. 28 e.

Records.—Off Chesapeake Bay and off North Carolina, ? depth (17).

Distribution.—Arctic, North Atlantic from Norway to France and Hudson Bay to North Carolina; Azores; Bering Sea; intertidal to 2,350 m.

Parahesione luteola (Webster, 1880)

Parahesione luteola. - Pettibone, 1956: 281, Fig. 1 a-e; 1963a: 108, Fig. 29 a-c.

Records.—No record from North Carolina.

Distribution.—Massachusetts to New Jersey and Georgia to the Gulf of Mexico; intertidal.

FAMILY SYLLIDAE

Key to genera and species

1	Ventral cirri distinct. Palps either separate or fused. Pharynx straight, seldom coiled	2
1′	Ventral cirri completely fused to setigerous lobes and indistinguishable. Palps completely fused. Pharynx long and coiled. (Subfamily *Autolytinae*)	23
2	Palps quite separate. Always two pairs of tentacular cirri. Antennae and dorsal cirri articulated. (Subfamily *Syllinae*)	3
2′	Palps fused basally. One or two pairs of tentacular cirri. Antennae and dorsal cirri seldom articulated (Subfamily *Eusyllinae*)	11
2″	Palps fused for more than half their length. One or two pairs of tentacular cirri. Antennae and dorsal cirri not articulated and often small (Subfamily *Exogoninae*)	16
3	Margin of pharynx with a circle of chitinous teeth (trepan) and a small dorsal tooth as well. Body flattened (*Trypanosyllis*). [Trepan with 10 teeth. Blades of setae bidentate. Never more than one sexual stolon]	*T. zebra*
3′	Margin of pharynx with a single anterior dorsal tooth (*Syllis*)	4
4	Setae of anterior feet compound but setae of middle feet may lose their blades and appear simple.	5
4′	All setae simple (subgenus *Haplosyllis*). [Setae shaped like boathooks with a boss preceding the curved and bifid tip. Dorsal cirri with 20-30 joints]	*S. (H.) spongicola*
5	Setae of middle segments reduced to two large simple setae with bluntly Y-shaped ends. [Dorsal cirri fusiform with about 10 joints]	*S. gracilis*
5′	Setae of middle segments fairly numerous and normally compound.	6
6	Two or three superior setae of middle segments with very long tapered blades; inferior setae with much shorter falcigerous blades (subgenus *Langerhansia*)	7
6′	All setae of middle segments with falcigerous blades graded in length (subgenus *Typosyllis*)	8
7	Dorsal cirri of posterior feet smooth or indistinctly articulated. Blades of posterior setae with secondary tooth stouter than apical one	*S. (L.) ferrugina*
7′	Dorsal cirri of posterior feet distinctly articulated. Blades of posterior setae with secondary tooth finer than apical one	*S. (L.) cornuta*

8	Dorsal cirri of middle feet short and fusiform with about 15 joints. Setae obviously bidentate	*S. (T.) hyalina*
8′	Dorsal cirri of middle feet at least as long as segmental breadth with more than 15 joints. Setae strongly bidentate	9
9	Setae of posterior feet with secondary tooth stronger than apical one. Dorsal cirri with 25-40 joints.	*S. (T.) regulata carolinae*
9′	Setae of posterior feet with secondary tooth not stronger than apical one	10
10	Dorsal cirri of middle segments alternately with 15 or 20 joints. Proventriculus extending over 7 to 9 segments.	*S. (T.) alternata*
10′	Dorsal cirri of middle segments alternately with about 30 and 37 joints. Proventriculus extending over 5 to 6 segments.	*S. (T.) prolifera*
11	Pharynx coiled. Body short with about 13 setigers. Large nuchal epaulettes (*Amblyosyllis*). [Six triscuspid marginal teeth]	*A. formosa*
11′	Pharynx straight. Body long with many setigers. No nuchal epaulettes	12
12	Large knobbed acicula projecting from anterior feet. Pharynx without teeth (*Streptosyllis*). [Setae with flanged shaft-heads and blades]	*S. arenae*
12′	Acicula normal, not exposed. Pharynx with one or more teeth.	13
13	A large occipital flap. Pharynx with a ventral semicircle of teeth halfway back (*Odontosyllis*). [Setal blades very long and strongly bidentate]	*O. longiseta*
13′	Occipital flap small or absent. Pharynx with a single anterior dorsal tooth and a smooth or denticulate margin	14
14	Margin of pharynx denticulate (*Eusyllis*). [Dorsal cirri extremely long and first pair of ventral cirri lamellar]	*E. lamelligera*
14′	Margin of pharynx smooth	15
15	One pair of tentacular cirri (*Parapionosyllis*)	*P. longicirrata*
15′	Two pairs of tentacular cirri (*Pionosyllis*). [Superior setae with elongated blades and inferior setae with short blades with secondary tooth larger than apical one]	*P.* cf. *uraga*
16	One pair of tentacular cirri	17
16′	Two pairs of tentacular cirri	21
17	Dorsal cirri ovoid, minute; body surface without sticky papillae or adherent silt. (*Exogone*)	18
17′	Dorsal cirri bottle-shaped or onion-shaped; body surface with sticky papillae and adherent silt (*Sphaerosyllis*)	20
18	Dorsal cirri on all setigers including second	19
18′	No dorsal cirrus on setiger 2. [Median antenna hardly longer than laterals]	*E. gemmifera*

19	Median antenna much longer than laterals	*E. dispar*
19′	Median and lateral antennae all equally short	*E. verugera*
20	Dorsal cirri on all setigers including second. No internal capsules above parapodia (*S. fortuita*)	No N.C. record
20′	No dorsal cirrus on setiger 2. No internal capsules above parapodia	*S. pirifera*
21	Dorsum with six rows of large globular papillae across each segment; antennae also globular (*Eurysyllis*)	*E. tuberculata*
21′	Dorsum without rows of globular papillae; [embryos carried on backs of females (*Brania*)]	22
22	Dorsal cirri abruptly truncate and containing fibrillar structures. Setae with unidentate blades	*B. pusilla*
22′	Dorsal cirri normally tapered and lacking fibrillar structures. Setae with bidentate blades	*B. clavata*
23	Superior simple setae with shafts as stout as those of compound setae. Segments without ciliated bands. Reproduction by anterior scissiparity (*Proceraea*)	24
23′	Superior simple setae with shafts more slender than those of compound setae. Segments with ciliated bands. Reproduction by posterior scissiparity, gemmiparity or epigamy (*Autolytus*)	25
24	Body colorless or with a pair of faint dorsolateral bands when fresh. Nuchal epaulettes rudimentary. [Trepan with 18 teeth]	*P. cornuta*
24′	Body with reddish bars on alternate segments when fresh. Nuchal epaulettes reach setiger 1	*P. fasciata*
25	Nuchal epaulettes reach setiger 3-4. [Trepan with 30 teeth including large laterals and small teeth in the dorsal and ventral arcs. Body colorless or segments faintly banded when fresh]	*A. dentalius*
25′	Nuchal epaulettes not reaching setiger 3	26
26	A chain of 2-8 sexual buds when mature. No color pattern. Trepan with 24-36 subequal teeth	*A. prolifer*
26′	Sexual buds formed singly. Anterior segments with four red spots when fresh. Trepan with 30-40 subequal teeth	*A. rubropunctatus*

***Trypanosyllis zebra* (Grube, 1860)**

Trypanosyllis zebra. - Fauvel, 1923: 269, Fig. 101 a-e. - Day, 1967: 256, Fig. 12.6. a, b.

Description.—Body markedly flattened, up to 60 mm long, with two narrow purple lines across anterior segments and purple dorsal cirri. Prostomium broader than long, with large palps well separated basally and two pairs of eyes. Two pairs of tentacular cirri. Antennae and dorsal cirri stout, with numerous (over 30) well-marked joints. Margin of pharynx (trepan) with 10 equal teeth and a small dorsal tooth as well. Setae all compound with bidentate blades, the two teeth being subequal and close together

at tip of blade. No cluster of sexual buds below pygidium.

Records.—Common on coral in 6.5-18 m off Beaufort (20, *). This is a new record for the United States.

Distribution.—English Channel; Mediterranean; Indian Ocean; intertidal to 30 m.

Syllis (Haplosyllis) spongicola (Grube, 1855)

Syllis (Haplosyllis) spongicola. - Fauvel, 1923: 257, Fig. 38 a-h. - Day, 1967: 240, Fig. 12.1. e-i.

Haplosyllis spongicola. - Imajima, 1966d: 220, Fig. 38 a-h. - Hartman, 1968: 433, Fig. 1-4.

Records.—Common from Cape Hatteras to Beaufort; intertidal to 30 m (5, 11, 13, 15, 18, 20, *).

Distribution.—Cosmopolitan in warm and tropical seas; intertidal to 100 m.

Syllis gracilis Grube, 1840

Syllis gracilis. - Fauvel, 1923: 259, Fig. 96 f, i. - Pettibone, 1963a: 116, Fig. 32. - Imajima, 1966d: 248, Fig. 49 a-h.

Syllis (Syllis) gracilis. - Day, 1967: 241, Fig. 12.1. m-p.

Records.—Common from Cape Hatteras to Beaufort; intertidal to 20 m (3, 11, 13, 17, 18, 20, *).

Distribution.—Cosmopolitan in temperate and tropical seas; intertidal to 200 m.

Syllis (Langerhansia) ferrugina Langerhans, 1881

Figure 4n-q

Syllis (Ehlersia) ferrugina. - Fauvel, 1923: 269, Fig. 100 k-u.

Syllis (Langerhansia) ferrugina. - Day, 1967: 244, Fig. 12.2. o-r.

Description.—Body about 10 mm long, without color markings. Palps large and separate basally; two pairs of eyes. Antennae and anterior dorsal cirri with 17-25 distinct joints; posterior dorsal cirri (Figure 4n) with very indistinct joints. Setae all compound including two or three superior ones with very long tapering blades (Figure 4q) and several inferior ones with bidentate blades of normal length (Figure 4o). Posterior setae (Figure 4p) with secondary tooth larger than apical one.

Records.—One specimen from 120 m off Beaufort (*).

Distribution.—Eastern Atlantic from Ireland and the Canary Islands to Angola and South Africa; intertidal to 30 m.

Syllis (Langerhansia) cornuta Rathke, 1843

Syllis (Ehlersia) cornuta. - Fauvel, 1923: 267, Fig. 100.

Syllis cornuta. - Pettibone, 1963a: 118, Fig. 31 i, j.

Langerhansia cornuta. - Imajima, 1966e: 256, Fig. 51 a-o.

Syllis (Langerhansia) cornuta. - Day, 1967: 244, Fig. 12.2. s-u.

Records.—Common from the Cape Hatteras area to Beaufort; intertidal to 7 m (11, 17, 18, 20).

Distribution.—Cosmopolitan from the Arctic to the Antarctic; intertidal to over 2,000 m.

Syllis (Typosyllis) hyalina Grube, 1863

Syllis (Typosyllis) hyalina.-Fauvel, 1923: 262, Fig. 98 a, b. - Day, 1967: 246, Fig. 12.2. v-x.

Typosyllis hyalina.- Hartman, 1968: 487, Fig. 1-3.

Description.—Length 10-35 mm. Prostomium with palps separate basally; three antennae, two pairs of eyes, and anterior ocular specks. Two pairs of tentacular cirri. Pharynx long with anterior dorsal tooth. Antennae and dorsal cirri distinctly jointed; dorsal cirri short and fusiform, those of middle segments having about 8-15 joints. Setae all compound with obviously bidentate blades.

Records.—Two specimens from 20 and 160 m off Beaufort (*).

Distribution.—Cosmopolitan in temperate and tropical seas; intertidal to shallow depths.

Syllis (Typosyllis) regulata carolinae New Subspecies

Figure 4a-f

Holotype.—USNM 43146; five paratypes, USNM 43147.

Description.—Body 20 mm long, very slender with rounded segments and long many-jointed dorsal cirri. No color markings. Prostomium (Figure 4a) broader than long with four small eyes and elongate palps separated basally. Median antenna much longer than laterals and inserted between eyes. Pharynx extending through 11 segments with a large anterior dorsal tooth. Proventriculus with 32 rows of points and extending through 5 or 6 segments. Dorsal cirri alternating in length; longer ones of middle segments (Figure 4f) exceeding twice segmental breadth and having about 40 joints, shorter ones equalling segmental breadth and having about 25 joints. Setigerous lobes long and conical, ventral cirri slender and pointed. Compound setae similar throughout, with long spinules on cutting edge of blade and strongly bidentate ends, the secondary tooth becoming stronger than apical one in posterior feet (Figure 4c). Two simple setae in posterior feet; superior one (Figure 4d) truncate or emarginate and inferior one (Figure 4e) with a definitely bidentate tip.

Remarks.—Imajima (1966e) described *Typosyllis regulata* from Seto, Japan, and compared it with *Typosyllis truncata* Haswell from Australia and *Typosyllis harti* Berkeley and Berkeley from Vancouver. All agree in having slender bodies, long many-jointed dorsal cirri and strongly bidentate compound setae, but differ in the length of the proventriculus and details of the acicula and posterior simple setae. Like *T. truncata*, the Carolinean specimens have the proventriculus extending through five or six segments, but they differ in having bidentate inferior simple setae and not pointed ones. Like *T. regulata* the Carolinean specimens differ from *T. harti* in having slightly knobbed acicula (Figure 4b) and setae with a strong secondary tooth and long serrations on the cutting edge of the blade. The Carolinean specimens differ from *T. regulata* in having a shorter proventriculus, which extends through 5-6 segments and not 11 and in having superior simple setae whose ends are truncate to bilobed instead of pointed. These differences are small and do not warrant more than subspecific rank.

Records.—Off Beaufort in 20 m on shelly sand (*).

Syllis (Typosyllis) alternata Moore, 1908

Typosyllis alternata. - Imajima, 1966e: 273, Fig. 58 a-l.

Records.—Common on corals in 18 m off Beaufort (20).

Distribution.—Alaska to California; Japan and northwest Japan Sea; intertidal to 350 m.

Syllis (Typosyllis) prolifera Krohn, 1852

Syllis (Typosyllis) prolifera. - Fauvel, 1923: 261, Fig. 97 a-g. - Day, 1967: 248, Fig. 12.3. g-i.
Typosyllis prolifera. - Imajima, 1966e: 292, Fig. 65 a-n.

Records.—On corals in 18 m off Beaufort (20).

Distribution.—English Channel; Mediterranean; Indo-west-Pacific from South Africa to Japan; Brazil; intertidal to 30 m.

Amblyosyllis formosa Claparède, 1863

Pterosyllis formosa. - Fauvel, 1923: 280, Fig. 105 h-m.
Amblyosyllis formosa. - Day, 1967: 259, Fig. 12.6. m-p.

Records.—On corals in 18 m off Beaufort (20).

Distribution.—North Atlantic from Plymouth to Senegal; Mediterranean; intertidal to 30 m.

Streptosyllis arenae Webster and Benedict, 1884

Streptosyllis arenae Webster and Benedict, 1884: 711, pl. 2: Fig. 17-21, pl. 3: Fig. 22, 23. - Pettibone, 1963a: 127, Fig. 31 l, m.

Records.—Two specimens from 5 to 10 m off Beaufort (*).

Distribution.—Massachusetts; intertidal.

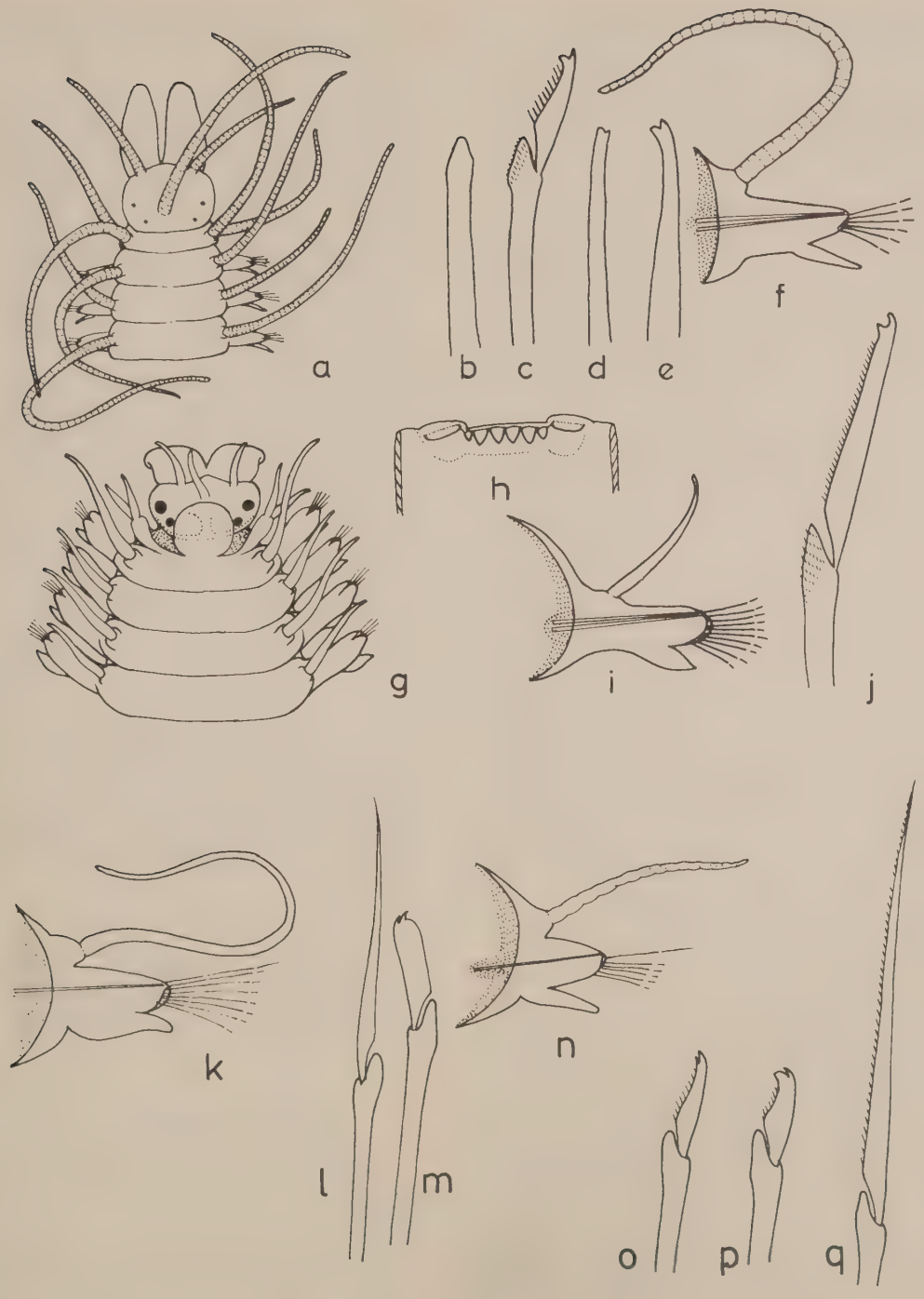

Figure 4.—*Syllis regulata carolinae* n. subsp. a, head; b, aciculum; c, posterior compound seta; d, superior simple seta; e, inferior simple seta; f, foot. *Odontosyllis longiseta* n. sp. g, head; h, pharynx slit dorsally and flattened to show teeth; i, foot; j, seta. *Pionosyllis* cf. *uraga* k, foot with longer dorsal cirrus; l, superior seta; m, inferior seta. *Syllis (Langerhansia) ferrugina* n, posterior foot; o, inferior seta of an anterior foot; p, inferior seta of a posterior foot; q, superior seta.

Odontosyllis longiseta, New Species

Figure 4g-j.

Odontosyllis n. sp. Day, Field, and Montgomery, 1971: 121.

Holotype.—USNM 43120; 100+ paratypes, USNM 43121.

Description.—Numerous specimens obtained but all broken. Complete specimen probably 15-20 mm long by 1.5 mm wide for 60-70 segments. Body stout, strongly arched dorsally but flattened ventrally. No color pattern and whole worm uniformly flesh pink in alcohol. Prostomium (Figure 4g) much broader than long and separated from tentacular segment by a deep groove. Palps broad and flattened, fused basally and bent ventrally. Two pairs of large red eyes, three rather short antennae, and a pair of curved nuchal ridges almost encircling posterior pair of eyes. Tentacular segment very short and fused dorsally to setiger 1, the large circular occipital flap appearing to arise from the latter. Two pairs of tentacular cirri slightly longer than antennae. Mouth with well defined lateral lips; buccal cavity with an internal dorsal projection at entrance to pharynx. Pharynx short, broad and strongly chitinized with a ventral arc of six recurved teeth and a cutting plate on either side (Figure 4h). Pharynx extending from setiger 8 to 10 and followed by a long muscular proventriculus with 60 rows of points extending from setiger 10 to 18.

Antennae, tentacular cirri, and dorsal cirri all smooth, tapered, and relatively short. Anterior dorsal cirri barely three-quarters segmental breadth, those of middle segments alternately longer and equal to half segmental breadth or shorter and equal to one third segmental breadth. Parapodia (Figure 4i) with setigerous lobes stout and obviously bilabiate with the setae issuing from a slit; ventral cirri stout with pointed tips. Setae (Figure 4j) all compound, with shaft-heads well serrated and blades unusually long and strongly bidentate; secondary tooth as large as apical one. No simple setae even in posterior feet.

Remarks.—As noted earlier, the buccal cavity has an internal dorsal ridge which extends back and becomes a digitiform lobe at the entrance of the pharynx. A similar structure was noted by Day (1967) in *Odontosyllis polycera* (Schmarda) and *Pharyngeovalvata natalensis* Day. Both also possess an occipital flap so that the two genera are related although *Pharyngeovalvata* lacks chitinous teeth.

In *Odontosyllis longiseta* the occipital flap appears to arise from the first setiger but this is due to the fact that the dorsal part of the tentacular segment is fused to the first setiger. In other species, where these two segments are separate, the occipital flap definitely arises from the tentacular segment.

O. longiseta is easily distinguished by the long, strongly bidentate blades of the setae, short dorsal cirri and the large occipital flap. In *O. fulgurans* Claparède, recorded by Pettibone (1963a) from New England, the setal blades are short, the dorsal cirri are about equal to the segmental breadth and the occipital flap is small. In *O. ctenostoma* Claparède, *O. polycera* (Schmarda), and *O. dugesiana* Claparède the setal blades are all short; in *O. gibba* Claparède the blades are long but unidentate.

Records.—Common off Beaufort in 20-200 m (21 *).

Eusyllis lamelligera Marion and Bobretzky, 1875

Eusyllis lamelligera. - Fauvel, 1923: 294, Fig. 113 a-e. - Pettibone, 1963a: 120, Fig. 33, 34 a-d.

Records.—North Carolina in 7 m (3, 17).

Distribution.—North Atlantic from Massachusetts to North Carolina and the English Channel to Spain; Mediterranean; 7-37 m.

Parapionosyllis longicirrata (Webster and Benedict, 1884)

Pionosyllis minuta. - Fauvel, 1923: 292, Fig. 111 f.

Parapionosyllis longicirrata. - Pettibone, 1963a: 132, Fig. 35 e, f.

Records.—Thirteen specimens in 10-20 m off Beaufort (21, *).

Distribution.—Massachusetts; Mediterranean; intertidal to 20 m.

Pionosyllis cf. *uraga* Imajima, 1966

Figure 4k-m

Description.—Body incomplete, with only 35 segments measuring 3 mm. No color markings. Prostomium with two pairs of eyes and three slender antennae; the median arising far back and twice as long as laterals. Palps broad, flattened, bent downwards, quite separate basally. Pharynx long with a smooth margin and a small dorsal tooth a quarter the way back. Proventriculus as long as pharynx with 30 rows of points. Parapodia with stout, blunt setigerous lobes bearing broad ventral cirri mainly fused to ventral margin. Dorsal cirri alternately very long and slender (Figure 4k), up to 1.5 times segmental breadth or short and only half segmental breadth. Setae characteristic and of two types, 3 to 5 superior ones (Figure 4l) with very long blades tapering to fine tips and 7 to 10 inferior ones (Figure 4m) with broad, bidentate chopper-shaped blades without marginal spinules. Apical tooth small and inconspicuous, secondary tooth larger and hooked. Acicula with faintly knobbed tips.

Remarks.—The long tapered blades of the superior setae are reminiscent of the subgenus *Langerhansia* but the latter has articulated dorsal cirri and here they are all quite smooth. This single broken specimen from North Carolina closely resembles *Pionosyllis uraga* as described by Imajima, (1966c: 114, Fig. 37 a-g) from Japan. However, the blades of the setae lack spinules, the shaft-heads are not serrated and the heads of the acicula lack a band of microscopic spinules. More material is required before the identification can be confirmed.

Records.—One specimen from 120 m off Beaufort (*).

Exogone gemmifera (Pagenstecher, 1862)

Exogone gemmifera. - Fauvel, 1923: 305, Fig. 117 a-d. - Imajima, 1966a: 397, Fig. 2 a-h. - Day, 1967: 274, Fig. 12.10. p-u.

Exogone naidina. - Pettibone, 1954: 258, Fig. 28 e.

Description.—Body 2-4 mm long with 24-33 setigers. Prostomium with two pairs of eyes and three antennae, the median just longer than the laterals. Palps short, completely fused and rounded anteriorly. Pharynx with an anterior dorsal tooth. Proventriculus extending through two segments. One pair of small tentacular cirri. Dorsal cirri small and ovoid and present on all segments except setiger 2. Ventral cirri distinct. Setae including a superior simple seta with an obliquely truncate tip, one or two compound setae with long, daggerlike blades and four or five compound setae with swollen serrate shaft-heads and minute bidentate blades with the secondary tooth larger than the terminal one. An inferior simple setae in posterior segments. Mature females carrying developing embryos ventrally.

Remarks.—The description of *Exogone naidina* Oersted given by Pettibone (1954) agrees perfectly with that of *E. gemmifera* which she includes in the synonymy of *E. naidina.* However, Fauvel and more recent workers do not regard the two as synonymous and until the types have been examined, I prefer to use the better known name.

Records.—Off Beaufort in 18-40 m (20, *). This is a new record for the Atlantic coast of the United States.

Distribution.—Arctic Seas; North Atlantic from France to North Carolina; Mediterranean; South Africa; North Pacific from the Bering Sea to Mexico and Japan to the Yellow Sea; intertidal to 225 m.

Exogone dispar (Webster, 1879)

Exogone dispar. - Hartman, 1945: 16, pl. 2: Fig. 7, 9, 10. - Pettibone, 1963a: 130, Fig. 35 d.

Exogone clavator Ehlers, 1913: 485, pl. 33: Fig. 1-6. - Day, 1967: 272, Fig. 12.10. a-f.

Exogone uniformis Hartman, 1961: 73, pl. 6: Fig. 1, pl. 7: Fig. 1-4. - Imajima, 1966a: 400, Fig. 4 a-j. - McCloskey, 1970: 24.

Remarks.—A direct comparison of specimens of *E. clavator* from South Africa with specimens of *E. dispar* from North Carolina showed that the two are identical. Imajima states that *E. uniformis* differs from *E. dispar* in having falcigerous setae with fewer teeth on the cutting margin. His Figures 4 f, g, h show that the

number of teeth varies from anterior to posterior feet and all other characters agree with *E. dispar*. It is suspected that *E. lourei* Berkeley is another synonym of *E. dispar*.

Records.—Common on sand and coral from low tide to 20 m off North Carolina (3, 5, 11, 13, 21, *).

Distribution.—Maine to Florida; Alaska to the Pacific coast of Mexico; South Japan; South Africa; intertidal to 130 m.

Exogone verugera (Claparède, 1868)

Exogone verugera. - Fauvel, 1923: Fig. 117 m-r. - Pettibone, 1963a: 129, Fig. 31 a-d. - Imajima, 1966a: 399, Fig. 3 a-h. - Day, 1967: 272, Fig. 12.10. g-l. - Hartman, 1968: 429, Fig. 1-4.

Records.—Three specimens in 10-20 m off Beaufort (*).

Distribution.—Cosmopolitan in temperate seas; intertidal to 150 m.

Sphaerosyllis fortuita Webster, 1879

Sphaerosyllis fortuita Webster, 1879: 221, pl. 4: Fig. 44-48.

Records.—No record from North Carolina.

Distribution.—Virginia; in 0 to 10 m.

Sphaerosyllis pirifera Claparède, 1868

Sphaerosyllis pirifera. - Fauvel, 1923: 301, Fig. 115 l-p.

Description.—Body 3 mm long with 36 segments. Surface with a few scattered adhesive papillae. Prostomium with fused palps, four eyes and three subequal bottleshaped antennae, the median one inserted between posterior pair of eyes. One pair of tentacular cirri. Dorsal cirri similar to antennae and tentacular cirri and present on all setigers except second. Setigerous lobes bluntly conical. No sign of internal capsules above parapodia. Five compound setae, all with short unidentate blades and, from setiger 2 onwards, one superior simple seta with a smooth curved tip.

Remarks.—The specimen from Beaufort agrees with Fauvel's description except that the palps are shorter and the dorsal cirri are smaller than the setigerous lobes.

Records.—One specimen from 20 m off Beaufort (*). This is a new record for the Atlantic coast of the United States.

Distribution.—Mediterranean; British Columbia to southern California; 0-10 m.

Eurysyllis tuberculata Ehlers, 1864

Eurysyllis tuberculata. - Fauvel, 1923: 271, Fig. 101 i-o.

Description.—Body 3 mm long with about 50 segments. Dorsum flattened and covered with six rows of globular papillae, the outermost pair on each segment representing dorsal cirri. Prostomium broader than long with three globular antennae and four eyes. Palps bent and united basally forming a hood in front of mouth. Peristome with two globular papillae and two pairs of globular tentacular cirri. Pharynx with a trepan of 10 marginal teeth plus a dorsal tooth. Proventriculus globular. Parapodia each with a globular dorsal cirrus and a short ventral cirrus separated from the blunt setigerous lobe (not fused to it, as stated by Fauvel). Setae compound and falcigerous with unidentate blades of medium length; acicula with swollen ends.

Records.—One specimen off Beaufort in 40 m (*). This is a new record for the United States.

Distribution.—Mediterranean; Madeira; English Channel; intertidal to a few meters.

Brania pusilla (Dujardin, 1839)

Grubea pusilla. - Fauvel, 1923: 299, Fig. 115 a-f.
Brania pusilla. - Day, 1967: 267, Fig. 12.9. d-f.

Records.—Abundant on corals off Beaufort, in 6.5-18 m (20).

Distribution.—North Atlantic from the English Channel to Morocco; Mediterranean; South Africa; intertidal to 30 m.

Brania clavata (Claparède, 1863)

Grubea clavata. - Fauvel, 1923: 296, Fig. 114 a-e.
Brania clavata. - Hartman, 1944c: 338, pl. 24: Fig. 5-8, pl. 25: Fig. 2. - Pettibone, 1963a: 133, Fig. 35 b. - Imajima, 1966a: 393, Fig. 1 a-g.

Records.—Common on corals in 18 m off Beaufort (20).
Distribution.—North Atlantic from Ireland to France and Massachusetts to the Gulf of Mexico; Mediterranean; North Pacific from the Bering Sea to Japan and the Yellow Sea; intertidal to 30 m.

Proceraea cornuta (Agassiz, 1863)

Autolytus cornutus. - Pettibone, 1963a: 144, Fig. 37 e. - Imajima, 1966b: 49, Fig. 13 a-i. - McCloskey, 1970: 24.
Proceraea cornuta. - Gidholm, 1967: 205, Fig. 13 e, f, 28 a-c.

Records.—Beaufort, intertidal to a few meters (3, 7, 20).
Distribution.—Arctic; Atlantic from Labrador to Chesapeake Bay and Norway to English Channel; Japan; intertidal to 140 m.

Proceraea fasciata (Bosc, 1802)

Proceraea tardigrada Webster, 1879: 27. - Andrews, 1891a: 282.
Autolytus fasciatus. - Pettibone, 1963a: 141, Fig. 37 a, b, 38, 39.
Proceraea fasciata. - Gidholm, 1967: 203 (note only).

Records.—Beaufort sound, intertidal to a few meters (3, 5, 7, 8, 11, 17).
Distribution.—Massachusetts to Caribbean; intertidal to 33 m.

Autolytus prolifer (Müller, 1784)

Autolytus prolifer. - Fauvel, 1923: 311, Fig. 119. - ? Pettibone, 1963a: 145, Fig. 40. - ? Day, 1967: 284, Fig. 12.13. f-k. - Gidholm, 1967: 186, Fig. 14, 15, 7A, 8.

Note.—According to Gidholm (1967), many of the earlier records of this species are doubtful. Nonetheless, it should be noted that *A. prolifer* has been reported from Beaufort Sound and on corals in 6-18 m by several workers (5, 8, 11, 15, 17, 18, and 20). Apart from the type locality (Norway) it has also been reported from several localities in the North Atlantic, the Mediterranean, and South Africa. Fresh material is needed to confirm this distribution.

Autolytus rubropunctatus (Grube, 1840)

Proceraea rubropunctata. - Andrews, 1891a: 283.
Autolytus rubropunctatus. - Fauvel, 1923: 314, Fig. 120 e-i.

Records.—Bogue Sound (5); Andrews gives no description and his specimens may belong to *Proceraea fasciata* reported by many other workers.
Distribution.—English Channel; Madeira; Mediterranean; intertidal to 30 m.

Autolytus dentalius Imajima, 1966

Autolytus alexandri. - Hartman, 1945: 17, pl. 2: Fig. 11. (*non* Malmgren).
Autolytus dentalius Imajima, 1966b: 36, Fig. 7 i-l.

Records.—Beaufort Sound, intertidal to a few meters (11).
Distribution.—North Carolina; central Japan; intertidal to 10 m.

FAMILY SPHAERODORIDAE

Key to genera and species

1	Setae compound and falcigerous (*Ephesiella*)	2
1′	Setae simple, hooked (*Sphaerodorum*)	No N.C. record
2	Only 6 large papillae across dorsum of each segment	*E. claparedii*
2′	Ten to twelve large papillae across dorsum of each segment (*E. minutum*)	No N.C. record

Ephesiella claparedii **(Greeff, 1866)**

Sphaerodorum claparedii. - Fauvel, 1923: 379, Fig. 149 d, e.

Description.—Body stout and ovoid, 2 mm long, with 18 segments. Prostomium indistinct, papillose. Each segment with a transverse row of six large papillae across dorsum and a band of smaller papillae across ventrum. No small papillae among large dorsal ones. Parapodia uniramous and cylindrical with three oval papillae distally. About 10 falcigerous compound setae per foot; blades faintly curved and unidentate.

Remarks.—The single specimen obtained was a female containing large eggs. It agrees very well with Fauvel's description except it lacked the small irregularly arranged papillae among the large dorsal ones. According to Hartman (1965b), this species should be referred to *Sphaerodoridium* Lützen, but according to Pettibone (1963a), it should be referred to *Ephesiella* Chamberlin of which *Sphaerodoridium* is a synonym.

Records.—One specimen from 200 m off Beaufort (*). This is a new record for the United States.

Distribution.—English Channel and Ireland; intertidal to a few meters.

FAMILY NEREIDAE

Key to genera and species

1	Parapodia essentially uniramous throughout with one bundle of setae. Proboscis without chitinous paragnaths or soft papillae. Three pairs of tentacular cirri. (*Lycastopsis*)	No N.C. record
1′	Parapodia biramous after first two with 4-5 parapodial lobes and two bundles of setae. Proboscis with chitinous paragnaths or soft papillae. Four pairs of tentacular cirri	2
2	Parapodia with two ventral cirri. No falcigerous setae. [Proboscis with soft papillae only. (*Ceratocephale*). Dorsal cirri very long. Prostomium incised]	*C. loveni*
2′	Parapodia with one ventral cirrus. Falcigerous setae present in neuropodia at least.	3
3	Probiscis with soft papillae, a few on basal ring sometimes brown and lightly chitinized. No falcigerous setae in posterior notopodia	4
3′	Proboscis with black chitinous paragnaths. Falcigerous setae sometimes present in posterior notopodia	5

4	Proboscis with tufts of soft papillae on maxillary ring (*Laeonereis*). Anterior parapodia with three notopodial lobes	*L. culveri*
4′	Proboscis with one row of soft or lightly chitinized papillae on oral ring. (*Websterinereis*) Anterior parapodia with three notopodial lobes. [Posterior parapodia with neuropodial lobes well separated from notopodial lobes. No simple ankylosed neurosetae]	*W. tridentata*
5	Chitinous paragnaths restricted to maxillary ring (*Ceratonereis*). [No notopodial falcigers]	6
5′	Chitinous paragnaths present on both basal and maxillary rings	7
6	Anterior feet with two notopodial lobes. [Dorsal cirrus shorter than superior lobe]	*C. irritabilis*
6′	Anterior feet with three notopodial lobes	*C. versipedata*
7	Paragnaths on group VI as one or more conical points (*Nereis*)	8
7′	Paragnaths on group VI as one or more plain transverse bars (*Perinereis*)	No N.C. record
7″	Paragnaths on group VI as one or two small comblike bars (*Platynereis*). [Notopodial falcigers of posterior feet with a minute terminal knob]	*P. dumerilii*
8	Posterior notosetae include one or more falcigers (subgenus *Nereis*)	9
8′	Posterior notosetae all spinigerous (subgenus *Neanthes*). [Anterior feet with three notopodial lobes]	11
9	Anterior feet with three notopodial lobes. [Proboscis with groups VII and VIII forming a band of three to four rows. Notopodial falcigers with long, lightly serrated blades]	*N. (Nereis) lamellosa*
9′	Anterior feet with two notopodial lobes	10
10	Group VI with a close-set group of 3-4 paragnaths; groups VII and VIII with none. Notopodial falcigers of posterior feet with short oval blades. [Dorsal cirri very short]	*N. (Nereis) grayi*
10′	Group VI with 4 paragnaths in a close-set group and groups VII and VIII with 3-7 points in a single row. Notopodial falcigers of posterior feet with long blades. [Two rows of brown spots on anterior segments]	*N. (Nereis) riisei*
10″	Group VI with 4-6 paragnaths and groups VII and VIII with numerous paragnaths in two to three irregular rows	*N. (Nereis) falsa*
11	Paragnaths on basal ring of proboscis in distinct groups: V = 1-4; VI = 6-8; VII and VIII = two or three irregular rows. [Superior lobe of posterior feet lamellar]	*N. (Neanthes) succinea*
11′	Paragnaths on basal ring of proboscis forming a broad and continuous band of points	*N. (Neanthes) acuminata*

Lycastopsis pontica (Bobretzky, 1872)

Lycastopsis tecolutlensis. - Hartman, 1951: 44.
Lycastopsis pontica. - Pettibone, 1963a: 150, Fig. 41.

Records.—No North Carolina record.

Distribution.—Massachusetts to Virginia and Mexico; West Indies and Brazil; Mediterranean and Black Sea; Japan; central California; intertidal and estuarine.

Ceratocephale loveni Malmgren, 1867

Chaunorhynchus loveni. - Hartman, 1942a: 49, Fig. 83-84.
Ceratocephale loveni - Pettibone, 1963a: 152, Fig. 42 a-b.

Records.—Five specimens from 40 m off Beaufort (*).

Distribution.—North Atlantic from Norway to the North Sea and Iceland to Virginia; Okhotsk Sea; from 40 to 2,000 m.

Laeonereis culveri (Webster, 1879)

Nereis culveri. - Webster, 1886: pl. 6.: Fig. 25-30, pl. 7: Fig. 31-32.
Laeonereis culveri. - Hartman, 1945: 21. - Pettibone, 1971: 14, Fig. 5-7.

Records.—On the shores of Beaufort Sound (8, 11, 13, 18).

Distribution.—Connecticut to Gulf of Mexico, Florida, West Indies, Brazil and Uraguay; intertidal and estuarine in muddy sand.

Websterinereis tridentata (Webster, 1880)

Figure 5a-f

Nereis tridentata Webster, 1880: 113; 1886: 142, pl. 7: Fig. 33-40.
Ceratonereis tridentata. - Hartman, 1945: 21, pl. 3: Fig. 3, 4.
Laeonereis n. sp. - McCloskey, 1970: 26.
Websterinereis tridentata. - Pettibone, 1971: 21, Fig. 8, 9.

Description.—Body slender, 20-30 mm long, mainly pale but with brown marks at origin of palps and brown spots above parapodia. Prostomium (Figure 5a) oval with a slight groove between antennae. Tentacular cirri very short, seldom reaching setiger 1. Proboscis (Figure 5b, c) without paragnaths or soft papillae on maxillary ring but with soft papillae on basal ring; area VI with one papilla; areas VII and VIII with one row of seven minute papillae, the middle three often chitinized and brown. Anterior feet (Figure 5d) with three notopodial lobes and a slightly longer dorsal cirrus. Setigerous lobe of neuropodium with well marked presetal and postsetal lips. Posterior feet (Figure 5f) with all lobes more pointed and dorsal cirrus small in juveniles but longer than superior lobe in adults. Notosetae as homogomph spinigers in all feet. Neurosetae include homogomph and heterogomph spinigers and heterogomph falcigers. Blades of anterior falcigers fairly long, almost rectangular with longer spinules distally; blades of posterior falcigers (Figure 5e) shorter and more hooked with tip attached back by a tendon.

Remarks.—The generic position of this species has caused considerable difficulty. The papillae on the basal ring of the proboscis are very small; in some specimens the whole proboscis appears smooth; in others the three papillae on area VII are brown and chitinized like small paragnaths. Such specimens might be refered to *Eunereis* except that they lack notopodial falcigers on posterior feet. A further discussion will be found in Pettibone (1971:20) who erected the genus *Websterinereis* with *W. tridenta* as the type-species.

Records.—Off Beaufort in 3-40 m (11, 13, 14, 18, 20, *)

Distribution.—New Jersey to Florida and the Gulf of Mexico; 3-40 m.

Ceratonereis irritablis (Webster, 1879)

Nereis irritabilis Webster, 1879: 231, pl. 5: Fig. 56-64; pl. 6: Fig. 65-69.
Ceratonereis irritabilis. - Hartman, 1945: 20, pl. 3: Fig. 7-9.

Records.—Common off the shores of Beaufort Sound and offshore in 10-80 m (3, 5, 11, 13, 18, 19, 21, *).

Distribution.—Virginia to North Carolina; intertidal to 80 m.

Ceratonereis versipedata Ehlers, 1887

Nereis (Ceratonereis) versipedata Ehlers, 1887: 116, pl. 36: Fig. 5-10. - Monro, 1933b: 256.

Records.—On coral in 10-18 m off Beaufort (14, 20).

Distribution.—North Carolina to Florida and the West Indies in 10-18 m.

Platynereis dumerilii (Audouin and Milne-Edwards, 1833)

Platynereis dumerilii. - Fauvel, 1923: 359, Fig. 141 a-f. - Pettibone, 1963a: 154, Fig. 43. - Day, 1967: 306, Fig. 14.4 d-k.

Records.—Common in mucus tubes attached to weeds all along North Carolina; intertidal to a few meters (3, 5, 11, 13, 14, 18).

Distribution.—Cosmopolitan in temperate and tropical seas; intertidal to 10 m.

Nereis (Nereis) lamellosa Ehlers, 1868

Figure 5k-o

Nereis (Nereis) lamellosa. - Fauvel, 1936: 36. - Day, 1967: 314, Fig. 14.7. a-t.

Description.—Prostomium broadly triangular with brownish marks laterally. Proboscis (Figure 5k, l) with group I = 1; II = an oblique double row; III = an oval group of about 10; IV = a wedge of numerous points; V = 0-3; VI = a rosette of 8-10; VII and VIII = three or four irregular rows. Anterior feet (Figure 5m) with three pointed notopodial lobes and a longer dorsal cirrus. Middle feet with only two notopodial lobes; posterior feet with superior notopodial lobe expanded and last few feet (Figure 5o) with superior notopodial lobe broad and lamellar bearing the small dorsal cirrus at its apex. Anterior notosetae all homogomph spinigers with rather short blades; posterior notosetae mainly homogomph spinigers but some feet with one or two homogomph falcigers with rather long blades (Figure 5n). Anterior and posterior neurosetae essentially similar, including homogomph and heterogomph spinigers with short blades and heterogomph falcigers with rather straight blades.

Remarks.—*Nereis (Nereis) lamellosa* and *Nereis (Neanthes) succinea* are very similar apart from the presence of notopodial falcigers in the former. They occur together in many parts of the world although *N. succinea* extends into estuaries while *N. lamellosa* does not. The notopodial falcigers of *N. lamellosa* are not numerous and readily lose their apices and their shafts are no stouter than those of the spinigers. As a result the complete absence of notopodial falcigers and the separation of *N. succinea* from *N. lamellosa* is not easy.

Records.—One specimen on coral in 10 m off Beaufort (*). This is a new record for the United States.

Distribution.—Mediterranean, Morocco, Senegal, and South Africa; 10-150 m.

Nereis (Nereis) grayi Pettibone, 1956

Nereis (Nereis) grayi Pettibone, 1956: 282, Fig. 3; 1963a: 183, Fig. 42 i.

Records.—Five specimens off Beaufort in 20-200 m (*).

Distribution.—Massachusetts; intertidal in mud to 18 m.

Nereis (Nereis) riisei Grube, 1856

Figure 5g-j

Nereis riisei. - Augener, 1922: 42; 1925: 6. - Hartman, 1951: 46.

Description.—Body up to 30 mm long; fresh specimens often with a brown bar across peristome or setiger 2 and dorsolateral spots on anterior segments. Tentacular cirri often reaching setiger 6. Proboscis (Figure 5g, h) with area I = 1-3 points in line; II = a double row; III = an oval group; IV = a wedge; V = 0; VI = a close-set group of 3-9 points; VII and VIII = one row of 3-7. Anterior feet (Figure 5i) with two notopodial lobes and a slender dorsal cirrus longer than short superior lobe. Posterior feet essentially similar. Notosetae of posterior feet include a few spinigers and usually one large homogomph falciger (Figure 5j) with an almost straight, lightly serrated blade.

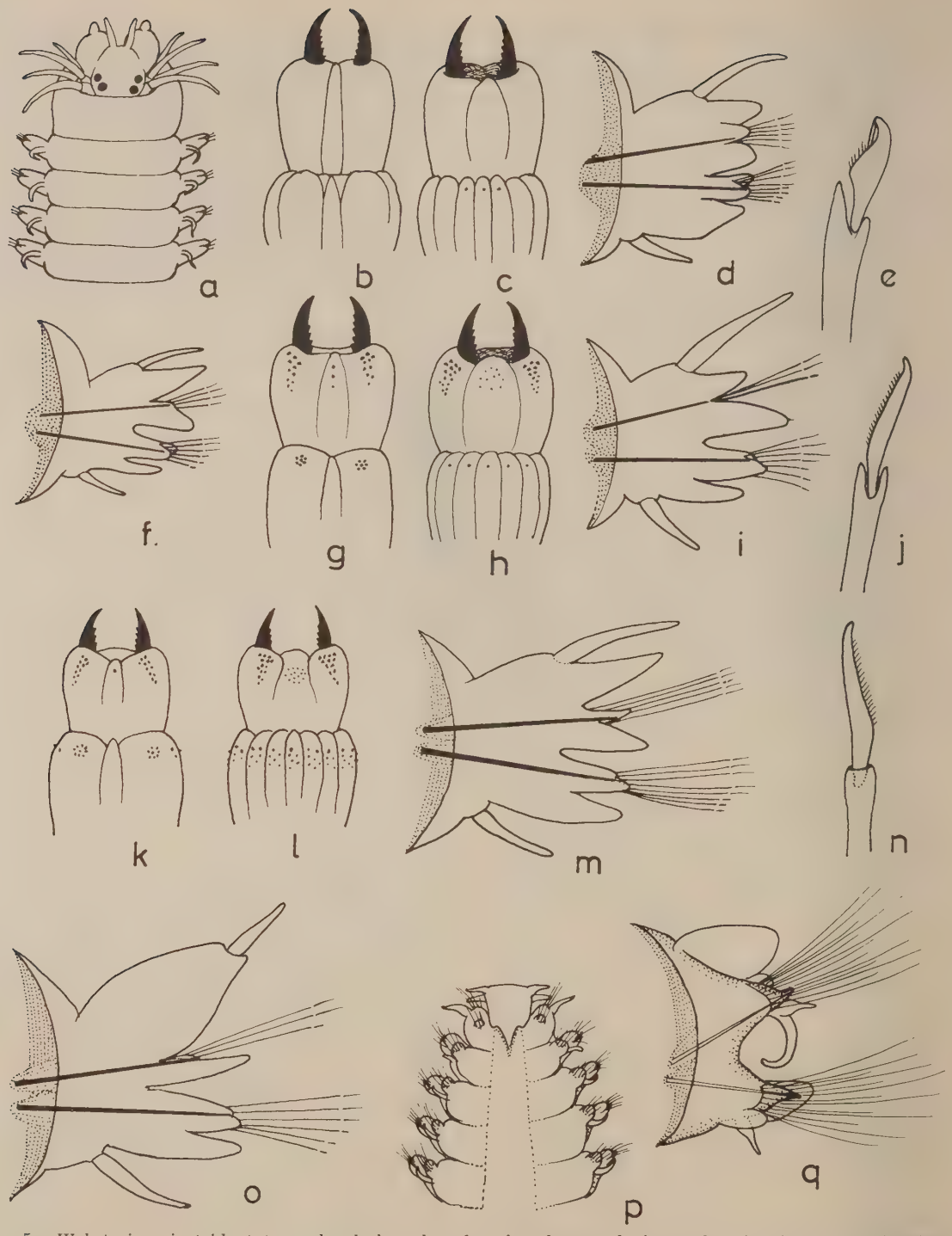

Figure 5.—*Websterinereis tridentata* a, head; b and c, dorsal and ventral views of proboscis; d, anterior foot; e, posterior falciger; f, posterior foot of juvenile. *Nereis riisei* g and h, dorsal and ventral views of proboscis; i, anterior foot; j, notopodial falciger. *Nereis lamellosa* k and l, dorsal and ventral views of proboscis; m, anterior foot; n, notopodial falciger; o, posterior foot. *Nephtys (Aglaophamus) circinata* p, anterior ends; q, anterior view of foot.

Records.—Eight specimens from 40 m off Beaufort (*).

Distribution.—Florida and Mexico (Veracruz) to the West Indies; on shallow reefs.

Nereis (Nereis) falsa Quatrefages, 1865

Nereis falsa. - Fauvel, 1923: 337, Fig. 129 e-m. - Day, 1967: 317, Fig. 14.7 k-o (with synonymy).
Nereis pelagica occidentalis Hartman, 1945: 20, pl. 4: Fig. 1-6; 1951: 46.
Nereis occidentalis. - McCloskey, 1970: 26.

Records.—Sounds and shallow reefs in 7 m near Beaufort (5, 11, 13, 15, 18, 20, *).

Distribution.—Warm and tropical Atlantic from France to West Africa and North Carolina to the Gulf of Mexico; Mediterranean; South Africa to Madagascar; intertidal to 30 m.

Nereis (Neanthes) succinea Frey and Leuckart, 1847

Neanthes succinea. - Hartman, 1945: 17, pl. 3: Fig. 1-2; 1968: 529, Fig. 1-5.
Nereis (Neanthes) succinea. - Pettibone, 1963a: 165, Fig. 44 a-e, 45 a-d. - Day, 1967: 321, Fig. 14.9. a-e.

Records.—Common on the shores of Beaufort Sound and offshore in 6.5-40 m (3, 5, 7, 11, 13, 15, 17, 18, 19, 20, 21, *).

Distribution.—Atlantic from the North Sea to South Africa and Massachusetts to Uraguay; Pacific Ocean from California to Panama; Indian Ocean from Cape Point to Natal; estuarine and intertidal to 40 m.

Nereis (Neanthes) acuminata Ehlers, 1868

Nereis (Neanthes) caudata. - Fauvel, 1923: 347, Fig. 135 a-e. - Day, 1967: 321, Fig. 14.9. f-j. - Hartman, 1968: 525, Fig. 1-5.
Nereis arenaceodentata Moore, 1903: 729, pl. 40: Fig. 1-10. - Pettibone, 1963a: 162, Fig. 44 i, 45 e.

Remarks.—Pettibone (1963a) states that *Nereis caudata* Delle Chiaje is a homonym. The next available name is *Nereis acuminata* Ehlers.

Records.—Seven specimens from 40 to 80 m off Beaufort (*).

Distribution.—North Atlantic from the English Channel to Spain and Massachusetts to Florida; Mediterranean; South Africa; southern California to Mexico; southern Australia, Tasmania, and New Zealand; intertidal to 100 m.

FAMILY NEPHTYIDAE

Key to subgenera and species of *Nephtys*

1	Interramal gills long and involute, curving downwards, then inwards	2
1′	Interramal gills short and revolute, curving downwards, then outwards (subgenus *Nephtys*)	4
1″	No interramal gills (subgenus *Micronephthys*)	No N.C. record
2	No proboscideal papillae. No ventral cirrus (subgenus *Inermonephtys*). [Dorsal cirri very long]	*N. (I.) inermis*
2′	Proboscideal papillae and ventral cirri present (subgenus *Aglaophamus*). [Forked setae present]	3
3	Eyes present. Dorsal cirri digitiform. Neuropodium with a straplike superior lamella and broad postsetal one.	*N. (A.) verrilli*
3′	Eyes absent. Dorsal cirri flattened. Neuropodium without a straplike superior lamella, only a large ligulate postsetal one.	*N. (A.) circinata*

4	Anterior dorsum with grey segmental bars. [A few short, geniculate, postacicular setae with coarse teeth at base of blade]	*N. (N.) picta*
4′	Dorsum uniformly pale	5
5	Bases of parapodia with scalelike lamellae covering intersegmental junctions both dorsally and ventrally	*N. (N.) squamosa*
5′	Bases of parapodia without scales	6
6	A red spot in middle of prostomium. Shorter postacicular setae with denticles at base of blade	*N. (N.) bucera*
6′	No red spot on prostomium. Postacicular setae without denticles at base of blade.	*N. (N.) incisa*

Nephtys (Inermonephtys) inermis Ehlers, 1887

Nephthys (Aglaophamus) inermis Ehlers, 1887: 125, pl. 38: Fig. 1-6.
Nephthys inermis. - Fauvel, 1923: 375, Fig. 147. - Hartman, 1940: 234, pl. 39: Fig. 84-86; pl. 40: Fig. 95.
Inermonephtys inermis. - Fauchald, 1968: 16, pl. 4: Fig. 31-35.

Description.—Body up to 50 mm long. Prostomium bluntly rectangular in front with a posterior prolongation. Two pairs of antennae but neither pair obvious; anterior pair bent down below margins of prostomium, posterior pair on sides of nuchal grooves at level of subdermal eyes. Proboscis very long and muscular but without papillae. Jaws as lightly chitinized ridges far back. First setiger small, bearing a digitiform dorsal cirrus, a rounded postsetal lamella on notopodium, and a ventral cirrus similar to dorsal one. Second setiger similar but larger. Third setiger with first branchia originating from base of dorsal cirrus. Parapodia fully developed at 10th segment. Notopodium formed by a blunt setigerous lobe bearing a rudimentary presetal lamella, a large dorsolateral postsetal lamella and below this, a very long dorsal cirrus and an involute branchia. Neuropodium formed of a bluntly conical setigerous lobe bearing a rudimentary presetal lamella, an even smaller postsetal lamella, and a long, stout, and tapering ventrolateral cirrus. Preacicular setae rather long but faintly barred; postacicular setae mainly with slender blades minutely serrated but also a few forked setae.

Remarks.—Fauchald has erected a new genus *Inermonephtys* with *N. inermis* as the type species. The genus is distinguished by the lack of proboscideal papillae, the character of the jaws and a different interpretation of the prostomial appendages. He regards the first pair of antennae as missing, the second pair as ventral and states that: "The nuchal organs are very well developed and each is equipped with one long, digitiform eversible process." His Figure 34 shows these digitiform processes as separate from the prostomium, whereas my specimens show that they arise from the margins of the prostium, close to the subdermal eyes. For this reason I regard these processes as the second pair of antennae, further back than usual, but nonetheless homologous with the second pair of antennae of other nephtyids. *Inermonephtys* is obviously related to *Aglaophamus* and both are here regarded as subgenera of *Nephtys.*

Records.—Off Beaufort in 160-450 m (*).

Distribution.—Florida and tropical Atlantic; Pacific; Mediterranean; 0-450 m.

Nephtys (Aglaophamus) verrilli McIntosh, 1885

Nephthys verrilli McIntosh, 1885: 163, pl. 26: Fig. 6, 7; pl. 32A: Fig. 8.
Aglaophamus dicirris Hartman, 1945: 22; 1950; 122, pl. 18, Fig. 1-8.

Aglaophamus verrilli. - Pettibone, 1963a: 190, Fig. 48 c, d.
Nephtys dicirris. - Day, Field, and Montgomery, 1971: 121.

Remarks.—Hartman (1950: 121) referred *N. verrilli* to *Aglaophamus dibranchis* (Grube) on the grounds that they both have 14 rows of papillae on the proboscis but McIntosh clearly stated that *N. verrilli* has 22 rows of papillae as does *A. dicirris.*

Records.—Beaufort, common on the shores of the sounds and offshore down to 200 m (11, 17, 21, *).

Distribution.—Chesapeake Bay to the Gulf of Mexico; California to the Pacific coast of Mexico; New Zealand; intertidal to 200 m.

Nephtys (Aglaophamus) circinata Verrill, 1874

Figure 5p, q

Aglaophamus circinata. - Pettibone, 1963a: 192, Fig. 48 a.

Description.—Length up to 50 mm. Prostomium (Figure 5p) with well-developed anterior antennae and subequal, ventrally situated posterior ones. No eyes even in juveniles. Proboscis with 14 rows of papillae. Setiger 1 with a large ventral cirrus but no dorsal one. Branchiae from setiger 2 or 3, becoming long and involute (Figure 5q), with a large flattened and distally pointed dorsal cirrus. Setigerous lobes with pointed projections over tips of acicula. Postsetal lamella of notopodium deeply notched with superior part large and projecting dorsolaterally and inferior portion small and oval. Presetal lamella of neuropodium divided, forming a rudimentary superior part and an oval inferior part. Postsetal lamella large and ligulate. Ventral cirri flattened and spear-shaped. Preacicular setae long and barred; postacicular setae very long and minutely spinulose over most of blade. No forked setae.

Remarks.—This species approaches *N. (A.) peruana* Hartman but the latter lacks the divided postsetal notopodial lamella.

Records.—Five specimens from 200 to 450 m off Beaufort (*).

Distribution.—Gulf of St. Lawrence to Long Island Sound; in 15-787 m.

Nephtys picta Ehlers, 1868

Nephtys picta. - Hartman, 1945: 22; 1950: 103; 1951: 49, pl. 10: Fig. 4. - Pettibone, 1963a: 195, Fig. 49 c, 50 c-f.

Records.—Very common on protected shores of North Carolina and in dredgings down to 200 m (3, 5, 11, 13, 17, 18, 21, *).

Distribution.—Massachusetts to Florida and the Gulf of Mexico; intertidal to 200 m.

Nephtys squamosa Ehlers, 1887

Nephtys squamosa. - Hartman, 1940: 237, pl. 41: Fig. 98, 99; 1968: 597, Fig. 1, 2. - Pettibone, 1963a: 194, Fig. 47 e. - Nonato and Luna, 1970b: 71, Fig. 27-31.

Records.—Common off Beaufort in 80-200 m (21, *).

Distribution.—Massachusetts to Florida, West Indies and Brazil; Morocco; southern California; Atlantic and Pacific coasts of tropical America; 26-200 m.

Nephtys incisa Malmgren, 1865

Nephthys incisia. - Fauvel, 1923: 369, Fig. 144 a, b.
Nepthys incisa. - Pettibone, 1963a: 198, Fig. 49 a, b, 51 a.

Records.—Beaufort; intertidal (9).

Distribution.—North Atlantic from Sweden to Portugal and Greenland to Chesapeake Bay; Mediterranean; intertidal to 1,750 m.

Nephtys bucera Ehlers, 1868

Nephtys bucera. - Hartman, 1950: 105. - Pettibone, 1963a: 196, Fig. 49 d, 50 a, b, 51 d.

Records.—Common at low tide in Beaufort Sound and offshore in 10-200 m (5, 8, 9, 11, 17, 18, 21, *).

Distribution.—Massachusetts to North Carolina; 0-200 m.

FAMILY GLYCERIDAE

Key to genera and species

1	Superior setae as simple capillaries and inferior ones compound and spinigerous. Two presetal lobes (*Glycera*)	2
1′	All setae compound and spinigerous. One presetal lobe (*Hemipodus*). [Proboscideal papillae include both oval and digitiform types]	*H. roseus*
2	Gills present but sometimes small and retractile. Parapodia with two postsetal lobes	3
2′	Gills entirely absent. One or two postsetal lobes	4
3	Two separate cirriform gills, one on dorsal edge of parapodium and one on ventral edge	*Glycera dibranchiata*
3′	One retractile branching gill arising from posterodorsal base of foot; [postsetal lobes subequal]	*Glycera americana*
4	Superior presetal lobe minute. [Papillae on proboscis long and smooth]	5
4′	Superior presetal lobe at least half as long as inferior one	6
5	Prongs of jaw support deeply notched, almost separate	*Glycera papillosa*
5′	Prongs of jaw support only slightly notched, almost fused	*Glycera capitata*
6	Jaw support deeply forked, forming two slender divergent prongs	7
6′	Jaw support completely fused forming one asymmetrical piece. [Papillae on proboscis with 8-10 rings]	*Glycera oxycephala*
7	Papillae on proboscis smooth	8
7′	Papillae on proboscis with 14-16 rings. [Parapodia with one emarginate postsetal lobe (*Glycera tenuis*)]	No N.C. record
8	Two low postsetal lobes or one emarginate lobe on all feet	*Glycera tesselata*
8′	One low postsetal lobe on first few feet, dividing to form a conical superior lobe and a low rounded median posterior lobe on subsequent feet	*Glycera asymmetrica*

Hemipodus roseus Quatrefages, 1865

Figure 6a-c

Hemipodus roseus. - Arwidsson, 1899: 28, pl. 2: Fig. 23, pl. 4: Fig. 58. - Hartman, 1950: 81 (table of characters).

Hemipodus borealis. - Hartman, 1950: 81; 1968: 637, Fig. 1, 2.

Description.—Body slender, uniformly pale in alcohol, 15-38 mm long by 0.8 mm wide with 80-100 segments. Prostomium as a slender cone with about 10 indistinct annulations and 4 small terminal antennae. No eyes. Proboscis with smooth papillae of two types (Figure 6b); numerous shorter tongue-shaped forms and fewer digitiform papillae about five times as long as broad. Four falcate jaws each with a

slender rodlike support (Figure 6a). All parapodia uniramous bearing only spinigerous setae. Anterior parapodia (Figure 6c) with an ovoid dorsal cirrus well above the elongate setigerous base, the conical ventral cirrus arising from its ventral margin. Presetal lobe tapered and about half as long as the setigerous base; postsetal lobe low and rounded. Posterior feet with a shorter presetal lobe and a longer, more pointed ventral cirrus.

Remarks.—This is the first record of the genus *Hemipodus* from the Atlantic since all of the 20 species that have been described are confined to the Pacific. However, the name *Hemipodus roseus* has been used with considerable hesitation for the majority of the descriptions are very similar and a reexamination of the types is obviously necessary. A few species appear to have characteristic proboscideal papillae but the rest are distinguished by differences in the shape of the parapodia which are known to change along the length of the body even in a single specimen. The type species of the genus is *Hemipodus simplex* (Grube) and Ehlers (1901) regarded this as the only valid species described before 1900. He included seven species in the synonymy and among them was *H. roseus* Quatrefages. Arwidsson (1899), however, argued that *H. roseus* was a valid species and his figures of the presetal lobe of the parapodia are closer to my specimens from North Carolina than are those of Ehlers for *H. simplex*. Knox (1960) has also figured the proboscideal papillae of *H. simplex* as all flattened and triangular in outline whereas my specimens have papillae of two types as shown in Figure 6b. For these reasons I have used the name *H. roseus*.

I have also compared the North Carolina specimens with a specimen of *H. borealis* Johnson from Fox Island, Wash., which Dr. Hartman kindly sent to me. *H. borealis* is 38 mm long and thus twice the size of the North Carolina specimens but there are no other important differences either in the shape of the parapodia or the proboscideal papillae or the jaw supports. In brief, *H. borealis* appears to be a synonym of *H. roseus*.

Records.—Common in 3-20 m of Beaufort (21, *).

Distribution.—Pacific coast of the Americas from Washington to Chile; intertidal to 18 m.

Glycera dibranchiata Ehlers, 1868

Glycera dibranchiata. - Hartman, 1945: 23; 1950: 70, pl. 10: Fig. 9, 10; 1968: 621, Fig. 1-4. - Pettibone, 1963a: 215, Fig. 56.

Records.—Common from Cape Hatteras to Beaufort; intertidal to 20 m (5, 9, 11, 13, 17, 18, 21, *).

Distribution.—Gulf of St. Lawrence to Florida and the Gulf of Mexico; central California to the Pacific coast of Mexico; intertidal to 400 m.

Glycera americana Leidy, 1855

Glycera americana. - Hartman, 1950: 73; 1968: 613, Fig. 1. - Pettibone, 1963a: 213, Fig. 54 a-e. - Nonato and Luna, 1970b: 71, Fig. 16.

Records.—Common from Cape Hatteras to Beaufort; intertidal to 120 m (2, 3, 5, 7, 8, 9, 11, 13, 15, 17, 18, 21, *).

Distribution.—Massachusetts to Argentina and the Strait of Magellan; British Columbia to Peru; South Australia and New Zealand; intertidal to 310 m.

Glycera papillosa Grube, 1857

Glycera papillosa. - Day, 1967: 358, Fig. 16.1. j-l.

Description.—Length 20-30 mm. Prostomium with eight rings. Proboscis with numerous long, slender, and smooth papillae and few ovoid forms. Jaw supports deeply forked; shorter prong united to longer one by a deeply notched pale area. Parapodia with two presetal lobes, superior one very small and not immediately evident; one low rounded postsetal lip. No branchiae.

Remarks.—This species is generally similar to *G. capitata* but may be distinguished by the shape of the jaw supports.

Records.—Five specimens off Beaufort in 20-160 m (20, *). This is a new record for the United States.

Distribution.—South Africa and Chile; intertidal to 200 m.

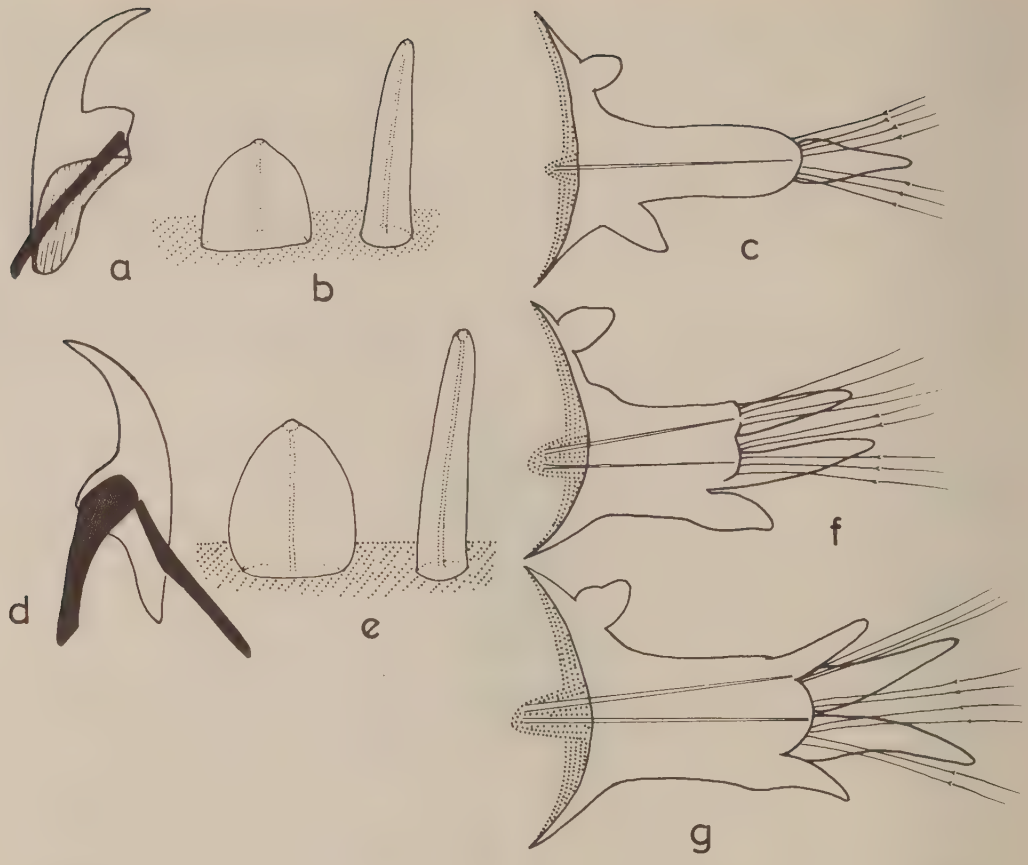

Figure 6.—*Hemipodus roseus* a, jaw and support (black); b, proboscideal papillae; c, posterior view of foot. *Glycera asymmetrica* n. sp. d, jaw and supports (black); e, proboscideal papillae; f, posterior view of anterior foot; g, posterior view of posterior foot.

Glycera capitata Oersted, 1843

Glycera capitata. - Fauvel, 1923: 385, Fig. 151 a-e. - Hartman, 1950: 76, pl. 11: Fig. 1-4; 1968: 617, Fig. 1-4. - Pettibone, 1963a: 211, Fig. 53.

Records.—One small specimen from 120 m off Beaufort (*).

Distribution.—Arctic; North Atlantic from Greenland to North Carolina and Norway to Madeira; Mediterranean; South Atlantic; Antarctic; Pacific from Alaska and Japan to Mexico; intertidal to 3,800 m.

Glycera oxycephala Ehlers, 1887

Glycera oxycephala. Hartman, 1940: 248, pl. 37: Fig. 74, 75, pl. 43: Fig. 122-124, pl. 44: Fig. 125; 1950: 70, pl. 10: Fig. 3, 4, text Fig. 3; 1968: 625, Fig. 1-6.

Records.—Common off Beaufort in 3-120 m (21, *).

Distribution.—Atlantic coast of United States from North Carolina to the tropics and Pacific Coast from Oregon to Panama; Galapagos Islands; intertidal to 800 m.

Glycera tesselata Grube, 1863

Glycera tesselata. - Fauvel, 1923: 387, Fig. 152 a-c. - Hartman, 1950: 77, pl. 10: Fig. 11, 1968: 633, Fig. 1-3. - Day, 1967: 359, Fig. 16.2. a-c.

Description.—Body up to 35 mm long. Proboscis covered with long smooth papillae. Jaw

supports very deeply forked, the two slender prongs being almost separate. Parapodia with two presetal lobes with the superior one slightly smaller. Either a single emarginate posterior lip or two low, rounded lobes. No branchiae.

Records.—Seven specimens from 6.5-120 m off Beaufort (20, *) This is a new record for the Atlantic coast of the United States.

Distribution.—Cosmopolitan in temperate and tropical seas; 5 to over 500 m.

Glycera asymmetrica New Species

Figure 6d-g

Holotype.—USNM 43148; three paratypes, USNM 43149.

Description.—Body rounded in section, tapered at extremities and up to 50 mm long. Prostomium elongate and tapered with about 15 indistinct rings but no visible eyes. Proboscis covered with numerous long smooth papillae and a few ovoid ones (Figure 6e). Jaw supports (Figure 6d) formed of two unequal rami quite separate except at point of contact with jaw. Shorter ramus expanded basally, longer ramus more slender. Parapodia without gills. All feet with two digitiform presetal lobes, the inferior one slightly longer. Postsetal lobes changing along the body; first 20 feet with a single truncate postsetal lobe (Figure 6f), posterior feet with a small posterodorsal digitiform lobe above a low rounded postsetal lobe (Figure 6g); middle feet changing from anterior to posterior form.

Remarks.—The posterodorsal digitiform lobe of the posterior feet is in the same position as the gill of *Glycera convoluta*, but it is definitely not a gill and is never as long as the presetal lobes. Apart from this queer asymmetrical lobe and rather shorter proboscideal papillae, this species resembles *G. tesselata*. In particular the form of the jaw supports is very similar. I am indebted to Dr. Pettibone for informing me that this species resembles *G. sphyrabrancha* Schmarda from Jamaica the type of which was redescribed by Augener, (1925: 29, Fig. 1). The jaw supports, proboscideal papillae and general appearance of the feet is similar. However Augener describes a nonretractile gill arising from the dorsal edge of the 30th and later feet which becomes much longer and stouter than the presetal lobes. It is possible, but unlikely, that this is the same as the "small posterodorsal digitiform lobe" described above, which as stated, is definitely not a gill.

Records.—Four specimens off Beaufort in 20 m (*).

FAMILY GONIADIDAE

Key to genera and species

1	Both anterior and posterior parapodia uniramous and bear only compound setae. Chevrons present (*Progoniada*). [Body mottled brown]	*P. regularis*
1′	Anterior parapodia uniramous, posterior ones with simple notosetae and compound neurosetae. Chevrons present or absent	2
2	A series of V-shaped chevrons at base of proboscis which is covered with small scattered papillae	5
2′	No V-shaped chevrons at base of proboscis; proboscideal papillae arranged in regular rows with much longer ones dorsolaterally	3
3	Compound setae either all falcigerous or some falcigerous and some spinigerous. Notosetae of posterior segments	

	arising directly from body wall above dorsal cirrus (*Goniadides*). [Notosetae as stout hooks. Eighteen or nineteen anterior segments]	*G. carolinae*
3′	Compound setae all spinigerous. Notosetae of posterior segments arising from bilobed notopodia (*Glycinda*)	4
4	Twenty-four anterior segments without notosetae	*Glycinde solitaria*
4′	Thirty-seven anterior segments without notosetae	*Glycinde nordmanni*
5	Superior compound setae spinigerous and inferior ones falcigerous (*Goniadella*); [28-30 anterior uniramous segments]	*Goniadella gracilis*
5′	All compound setae spinigerous (*Goniade*)	6
6	Posterior notopodia bear 2-3 acicular notosetae. [Neuropodia with 2 presetal lobes; jaws with an arc of 11 denticles above and 9 below]	*Goniada teres*
6′	Posterior notopodia bear several capillary notosetae	7
7	Anterior feet (e.g., 15th) all with one presetal lobe. [Jaws with few (3-5) denticles dorsally and the same number ventrally]	*Goniada maculata*
7′	Anterior feet (e.g., 15th) with two presetal lobes	8
8	Papillae on proboscis with a prominent beak	*Goniada littorea*
8′	Papillae on proboscis squat and flanged, not beaked	9
9	Notosetae appear about segment 40-45. Jaws with 2-4 denticles dorsally and about 10 ventrally	*Goniada brunnea*
9′	Notosetae appear about segment 30-37. Jaws with 15-25 denticles dorsally and an equal number ventrally	*Gondia norvegica*

Progoniada regularis Hartman, 1965

Progoniada regularis Hartman, 1965a: 100, pl. 16: Fig. a-f.

Records.—Two specimens in 450 m off Beaufort (*).

Distribution.—Western Atlantic from New England to northwestern South America in 600-5,000 m.

Goniadides carolinae New Species

Figure 7a-h

Goniadides n. sp. Day, Field, and Montgomery, 1971: 121

Holotype.—USNM 43389; 40+ paratypes, USNM 43390.

Description.—Body slender and threadlike, 16 mm long for 85 segments. Color pale with light brown spots above and below parapodial bases. Prostomium (Figure 7a) long and tapered with eight distinct rings and four biarticulate terminal antennae. No eyes. Base of proboscis smooth and without chevrons but distal part with regular rows of dissimilar papillae as in the genus *Glycinde*. As seen in section (Figure 7h), middorsal row I absent; dorsolateral band II formed of four alternating rows of strongly chitinized and curved papillae; lateral row III as a single series of low cones; ventrolateral row IV similar to III; midventral row V as a single series of minute cones each slightly beaked. All papillae with apical pores. End of proboscis (Figure 7d) armed with a pair of ventrolateral macrognaths each bearing four

teeth, a single midventral micrognath, and a dorsolateral arc of micrognaths.

Body divided into an anterior region of 18 uniramous segments and a posterior region of numerous rather flattened and biramous segments. Distinction between regions not obvious. Anterior parapodia (Figure 7b) with a tapered dorsal cirrus, a long setigerous trunk bearing a tapered presetal lobe and a low, rounded postsetal lip and a tapered ventral cirrus arising from base of trunk. Posterior parapodia (Figure 7c) characterized by presence of one or two short hooked notosetae (Figure 7e) emerging from medial margin of reduced dorsal cirrus now representing the notopodium. Neuropodium and ventral cirrus similar to setigerous trunk and ventral cirrus of anterior segments. Setae of anterior segments and neurosetae of posterior segments identical; three superior ones being spinigerous with heterogomph shaft-heads and lightly serrated blades (Figure 7f) and one or two inferior ones being falcigerous (Figure 7g) with small blades ending in blunt tips.

Pygidium brownish with a pair of long anal cirri.

Remarks.—The characters of the paratypes were very constant, the only differences from the holotype that were noted being the presence of 5 micrognaths in the dorsolateral arc instead of 9 and the anterior region consisting of 19 segments instead of 18.

In general *G. carolinae* resembles a small *Glycinde* but differs from that genus in the possession of falcigerous setae, a reduced notopodium in the posterior region and possibly in the proboscideal papillae although the range of variation of these organs in *Glycinde* is uncertain. The genus *Goniadides* was erected by Hartmann-Schröder (1960) for *G. aciculata* from the Red Sea. Regarding the proboscideal papillae she stated: "Proboscidiale Organe wenig unterschiedlich." In 1962 she described *G. falcigera* from Peru with all neurosetae falcigerous and proboscideal papillae of several types like those of *Glycinde* although she does not mention that genus. *Goniadides carolinae* is closer to *G. acicula* but differs in the structure of the notopodial hooks and the proboscideal papillae.

Records.—Common on sand in 10-20 m off Beaufort (21, *). This is the first record of the genus from the Atlantic and the coast of the United States.

Glycinde solitaria (Webster, 1880)

Glycinde solitaria. - Hartman, 1950: 54, pl. 7: Fig. 1-15. - Pettibone, 1963a: 222, Fig. 56 h-n.

Records.—Cape Hatteras area to Beaufort, intertidal (11, 18).

Distribution.—New Jersey to North Carolina and Puerto Rico; intertidal to 47 m.

Glycinde nordmanni (Malmgren, 1865)

Figure 7i-k

Eone nordmanni. - Fauvel, 1923: 394, Fig. 155 h-n.

Glycinde nordmanni.—Arwidsson, 1899: 50, pl. 3: Fig. 45-47, pl. 4: Fig. 64, 65. - Hartman, 1950: 47 (key only).

Description.—Body about 30 mm long, olive green in alcohol with midventral spots on abdominal segments; prostomium long and tapered with eyespots on both basal and distal rings. Proboscis with the usual longitudinal rows of dissimilar papillae; dorsolateral bands long, clawlike and well chitinized, lateral and ventral rows low and soft. Jaws with a pair of small macrognaths ventrally and an arc of 15-25 micrognaths dorsally. No ventral micrognaths.

Body divided into an anterior region of 36-39 uniramous segments and a posterior region of numerous, rather flattened biramous segments. Anterior feet (Figure 7i) with a tapered dorsal cirrus not incised basally, a parapodial trunk bearing one presetal and one postsetal lobe of equal length and a digitiform ventral cirrus. Setae all compound and spinigerous and arise between partly fused presetal and postsetal lobes. Posterior feet (Figure 7j) with a small notopodium and much larger neuropodium. Notopodial lobes and dorsal cirrus subequal. Notosetae (Figure 7k) short, stout, and acicular, the bluntly hooked end surmounted by a dagger-shaped guard. Neuropodia generally similar to setigerous lobes of anterior feet but presetal and postsetal lobes shorter and more pointed and ventral cirrus stouter and more distal in origin. Neurosetae spinigerous like those of anterior feet.

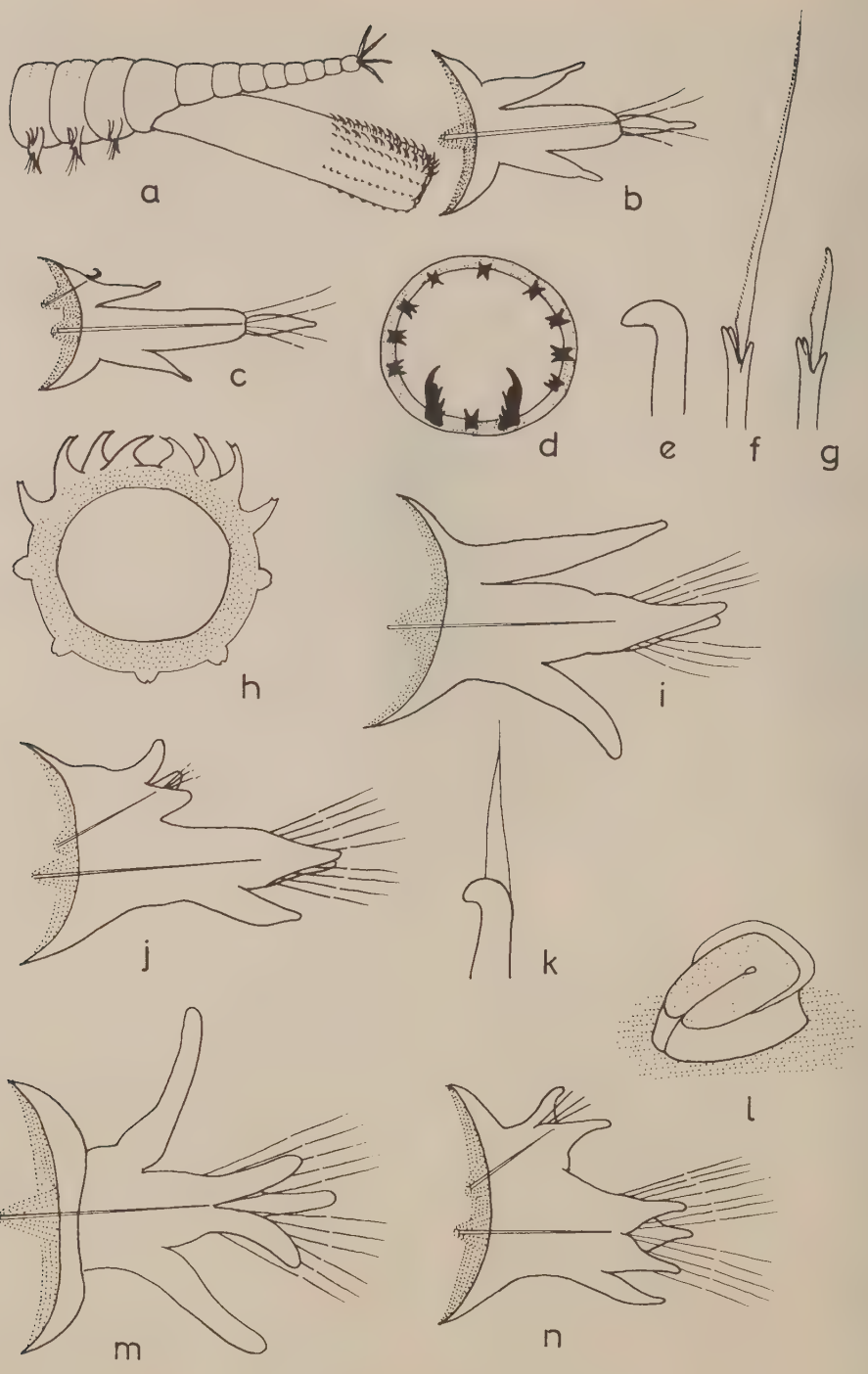

Figure 7.—*Goniadides carolinae* n. sp. a, head with proboscis partly extruded; b, posterior view of anterior foot; c, posterior view of posterior foot; d, end of proboscis with jaws; e, hooked posterior notoseta; f, spinigerous seta; g, falcigerous seta; h, section of proboscis with papillae. *Glycinde nordmanni* i, anterior foot; j, posterior foot; k, acicular notoseta. *Goniada teres* l, proboscideal papilla; m, posterior view of anterior foot; n, posterior view of posterior foot.

Records.—Two specimens from 80 to 120 m off Beaufort (*). This is a new record for the United States.

Distribution.—Western Europe; 5-139 m.

Goniadella gracilis (Verrill, 1873)

Goniadella gracilis. - Hartman, 1950: 42, pl. 5: Fig. 4-8. - Pettibone, 1963a: 220, Fig. 56 a-g. - Day, 1967: 368, Fig. 16.4. o-t.

Records.—Off Beaufort in 450 m (*).

Distribution.—Massachusetts to Rhode Island; Irish Sea; South Africa; intertidal to 450 m.

Goniada teres Treadwell, 1931

Figure 7l-n

Goniada teres. - Hartman, 1950: 33.

Description.—Body up to 80 mm long, olive green in alcohol with midventral spots on abdominal segments. Prostomium long and tapered with 10 rings and 2 pairs of minute terminal antennae. Proboscis very long and covered with squat papillae (Figure 7l) each with a slit leading to a central pore and a horseshoe-shaped flange. Base of proboscis with 10 chevrons. Jaws include a pair of ventrolateral macrognaths, a ventral arc of 5-9 micrognaths and a dorsal arc of 10-15 micrognaths.

Body divided into an anterior region of 43 uniramous segments, 8-9 transitional segments with bilobed notopodia but no notosetae, and a posterior region of numerous biramous segments with notosetae. Sometimes 51 anterior uniramous segments but no transitional segments. Anterior parapodia (Figure 7m) fully developed from 15th segment. Each with a tapered dorsal cirrus, a setigerous trunk bearing two digitiform presetal lobes, and a single postsetal lobe and below these a long ventral cirrus. Setae spinigerous with long blades. Posterior parapodia (Figure 7n) with a small bilobed notopodium bearing two or three blunt acicular setae and a neuropodium generally similar to setigerous lobe of anterior feet but with shorter, broader, and more pointed presetal and postsetal lobes.

Records.—Common off Beaufort in 20-200 m (21, *). This is a new record for the United States.

Distribution.—Jamaica.

Goniada maculata Oersted, 1843

Goniada maculata. - Fauvel, 1923: 392, Fig. 154 a-g. - Hartman, 1950: 20, pl. 1: Fig. 7, 8. - Pettibone, 1963a: 225, Fig. 58. - Day, 1967: 367, Fig. 16.4. k-n.

Records.—Twelve specimens off Beaufort in 80-1,650 m (21, *).

Distribution.—Cosmopolitan from low tide to 2,000 m.

Goniada littorea Hartman, 1950

Goniada littorea Hartman, 1950: 23, pl. 3: Fig. 1-10.

Records.—Common off Beaufort in 3-160 m (21, *). This is the first record from the Atlantic coast of the United States.

Distribution.—Southern California; intertidal to 160 m.

Goniada brunnea Treadwell, 1906

Goniada brunnea. - Hartman, 1950: 17, pl. 1: Fig. 1-6, pl. 4, Fig. 1, text Fig. 1; 1968: 653, Fig. 1-4. - Pettibone, 1963a: 228, Fig. 57 a, b.

Records.—From the shore in the Cape Hatteras area and questionably in 200 m off Beaufort (18, ? *).

Distribution.—Massachusetts to North Carolina and Alaska to southern California and Hawaii; intertidal to 1,680 m.

Goniada norvegica Oersted, 1845

Goniada norvegica. - Fauvel, 1923: 393, Fig. 155 a-g. - Pettibone, 1963a: 227, Fig. 59.

Records.—One specimen from 200 m off Beaufort (*).

Distribution.—North Atlantic from Norway to West Africa and Iceland to the West Indies; Mediterranean; from 40 to 900 m.

FAMILY EUNICIDAE

Key to genera and species

1	Three antennae. No tentacular cirrus. No branchiae. (*Lysidice*). [Maxilla II with 4 teeth]	2
1′	Five antennae. Tentacular cirri present or absent. Branchiae present	3
2	Eyes oval	*L. ninetta ninetta*
2′	Eyes reniform	*L. ninetta collaris*
3	Tentacular cirri present (*Eunice*)	4
3′	Tentacular cirri absent (*Marphysa*). [Branchiae from about 20th foot to posterior end. Compound setae spinigerous. Acicular setae bidentate]	*M. sanguinea*
4	Acicular setae tridentate. [Branchiae from setiger 4-7 to end of body. Acicula with truncate or almost bilobed ends. Antennae deeply annulated]	*E. antennata*
4′	Acicular setae bidentate	5
5	Branchiae from setiger 3 to middle of body. Antennae and dorsal cirri weakly annulated. Acicula bluntly pointed.	*E. websteri*
5′	Branchiae from about setiger 25 to end of body. Antennae and dorsal cirri smooth. Acicula with expanded, fist-shaped ends	*E. filamentosa*

Lysidice ninetta ninetta Audouin and Milne-Edwards, 1833

Lysidice ninetta. - Fauvel, 1923: 411, Fig. 162 a-f. - Nonato and Luna, 1970a: 84. - Day, 1967: 403, Fig. 19.8. g-i.

Records.—Shallow reefs off North Carolina (14).

Distribution.—English Channel; Mediterranean; Angola; Brazil; ? Indian Ocean; intertidal to 50 m.

Lysidice ninetta collaris Grube, 1870

Lysidice collaris Grube, 1870: 495. - Gravier, 1900: 272, pl. 14: Fig. 93-95, text Fig. 144-147. - Day, 1967: 402, Fig. 17.8. a-f.
Lysidice ninetta. - Fauchald, 1970: 52.

Remarks—As many earlier workers have noted, *L. ninetta* and *L. collaris* differ only in the shape of the eyes which are reniform in *L. ninetta* and oval in *L. collaris*. Fauchald states that the degree of ocular pigmentation is a function of size and regards the two as synonymous. My observations on worms of many sizes does not agree with this. Moreover *L. collaris* is restricted to subtropical or tropical waters while *L. ninetta* is cosmopolitan. For these reasons I have retained *L. collaris* as a subspecies of *L. ninetta*.

Records.—Two specimens on coral in 18 m off Beaufort (20, *).

Distribution.—Circumtropical; intertidal to 50 m.

Marphysa sanguinea (Montagu, 1815)

Marphysa sanguinea. - Fauvel, 1923: 408, Fig. 161 a-h. - Pettibone, 1963a: 236, Fig. 62. - Day, 1967: 396, Fig. 17.5. u-y. - Hartman, 1968: 733, Fig. 1-5.

Records.—Common on intertidal mudbanks from Cape Hatteras to Beaufort Sound (3, 5, 7, 11, 13, 15, 17, 18, 20, *).

Distribution.—Cosmopolitan in temperate and subtropical waters. Mainly in intertidal mud flats but may extend a few meters below.

Eunice antennata (Savigny, 1820)

Eunice antennata. - Fauvel, 1953: 240, Fig. 118 f-g. - Day, 1967: 384, Fig. 17.2. k-q. - Hartman, 1968: 711, Fig. 1-5.
Eunice rubra. - Hartman, 1945: 24; 1951: 55. - Nonato and Luna, 1970b: 81.

Remarks.—A careful comparison of *E. antennata* from South Africa and *E. rubra* from North Carolina showed that the two are identical. In both, the acicula are pale with bevelled and truncate or almost bilobed ends.

Records.—Beaufort, intertidal to 40 m on rock or coral (5, 11, 13, 20, *).

Distribution.—Circumtropical; intertidal to over 50 m, often on coral.

Eunice websteri Fauchald, 1969

Eunice websteri Fauchald, 1969: 12, Fig. 6 (with synonymy).
Eunice longicirrata Webster, 1884: 31, pl. 12: Fig. 74-80.
[Non] *Eunice (Nicidion) longicirrata* Kinberg, 1865: 564.
Eunice pennata. - McCloskey, 1970: 24.

Description.—Body up to 120 mm long with white bars on setigers 3 and 8 when fresh. Head notched in front; antennae with long, poorly marked annulations; tentacular cirri and anterior dorsal cirri also long and annulated. Branchiae from setiger 3, at first with a single filament but soon increasing to a maximum of 15 filaments and ending about middle of body (setiger 53 in type). Acicular setae one or two per foot, usually bidentate but occasionally with an indication of a third tooth. Compound setae falcigerous, strongly bidentate, with bluntly ending guards.

Remarks.—Fauchald has shown that Webster's original name *E. longicirrata* is preoccupied and that *E. websteri* belongs to a group of closely related species whose differences he tabulated although some of the characters mentioned are of minor significance. *E. websteri* is also very close to *E. pennata* (Müller) from which it differs in having blunt instead of pointed guards to the falcigerous setae, in color markings, and in having articulated dorsal cirri.

Records.—Two specimens off Beaufort in 18-40 m (20 *).

Distribution.—Bermuda; intertidal.

Eunice filamentosa Grube, 1856

Eunice filamentosa. - Monro, 1933b: 65, text Fig. 27. - Hartman, 1944a: 107, pl. 6: Fig. 123-126. - Day, 1967: 392, Fig. 17.5. f-h.

Records.—Reefs and stones off Beaufort in 5-20 m (14, 20, *).

Distribution.—Tropical Atlantic from North Carolina and Florida to the West Indies and Ghana and Angola on West Africa; Pacific coast of Mexico and Galapagos Islands; South Africa (Natal); intertidal to 120 m.

FAMILY ONUPHIDAE

Key to genera and species

1	Tentacular cirri present	2
1′	Tentacular cirri absent. [Gills as simple filaments, (*Hyalinoecia*). Tube quill-like and translucent. Gills from setiger 24 onwards]	*H. tubicola*
2	Gills from setiger 4 or 5 with filaments arranged in spirals on a central axis. (*Diopatra*)	3
2′	Gills as single filaments or pectinately branched	4

3	Body brown but without a color pattern. Pseudocompound setae of setigers 1-3 bidentate. Comb-setae with about 20 teeth	*D. cuprea cuprea*
3′	Branchiferous segments with brown crossbars. Pseudocompound setae of setigers 1-3 either bidentate or tridentate. Comb-setae about 25 teeth	*D. cuprea spiribranchis*
4	Setae of first three feet very long, with spiny shafts and hooked tips (*Rhamphobranchium*). [Branchiae from setiger 6. No compound spinigerous setae]	*R. atlanticum*
4′	Setae of first three feet not much longer than subsequent ones and never with spiny shafts (*Onuphis*)	5
5	Gills in middle of body as a single filament arising from the dorsal cirrus (subgenus *Nothria*)	6
5′	Gills in middle of body as two or more filaments arising from the dorsal cirrus (subgenus *Onuphis*)	7
6	Body markedly flattened and first two feet elongated. Tube flat with large shell fragments. Gills from setiger 11-13	*O. (N.) conchylega*
6′	Body normal and first two feet not elongated. Tube not flat. Gills from setiger 6-7. [2-3 spinigerous compound setae in 7th-10th foot. Segments barred in brown]	*O. (N.) pallidula*
7	Gills start on setiger 1. Ceratophores of occipital antennae with more than 11 rings	*O. (O.) eremita*
7′	Gills start on setiger 6-8. Ceratophores of occipital antennae with less than 10 rings	8
8	One or two spinigerous compound setae in 7th-12th foot. [Anterior ventrum minutely speckled]	*O. (O.) nebulosa*
8′	No spinigerous compound setae	9
9	Ventral cirri cirriform only on first two feet. Pseudocompound setae tridentate	*O. (O.) microcephala*
9′	Ventral cirri cirriform on first four of five feet. Pseudocompound setae bidentate	*O. (O.) magna*

Hyalinoecia tubicola (Müller, 1776)

Hyalinoecia tubicola. - Fauvel, 1923: 421, Fig. 166 i-q. - Pettibone, 1963a: 254, Fig. 65 d. - Day, 1967: 411, Fig. 17.9. l-r.

Records.—Common on the continental slope off Beaufort at 450-600 m (17, *).

Distribution.—Cosmopolitan below 200 m on sandy mud.

Diopatra cuprea cuprea (Bosc, 1802)

Diopatra cuprea. - Hartman, 1944a: 54, pl. 1: Fig. 9-14. - Pettibone, 1963a, 250, Fig. 66.
Diopatra cuprea cuprea. - Day, 1967: 417, Fig. 17.12. a-d.

Records.—Common in Beaufort Sound on intertidal banks and shallow dredgings offshore to 20 m (2, 3, 4, 5, 7, 8, 9, 11, 13, 15, 17, 18, 21, *).

Distribution.—Intertidal to 30 m on quiet,

sandy shores from Massachusetts to Brazil; tropical West Africa; tropical Indian Ocean.

Diopatra cuprea spiribranchis Augener, 1906

Diopatra spiribranchis Augener, 1906: 145, pl. 5: Fig. 88-96. - Nonato and Luna, 1970b: 74.

Description.—Length up to 260 mm. Tube muddy, fragile, without shell fragments. Body pale with two brown bars close together on posterior margins of branchiferous segments. Ceratophores of occipital antennae with about 10 rings. Pseudocompound hooks of first three feet strongly bidentate or even tridentate with a slender third tooth. Comb-setae with 20-25 teeth. Ventral cirri cirriform on first four feet.

Remarks.—This subspecies resembles *D. neotridens* Hartman in having pseudocompound hooks with the third tooth slender and in having comb-setae with numerous fine teeth, but the pigment pattern is quite different and so is the nature of the tube.

Records.—Ten small specimens in 40-160 m off Beaufort (21, *).

Distribution.—West Indies and Brazil in 21-200 m on muddy sand.

Rhamphobrachium atlanticum, New Species

Figure 8a-h

Holotype.—USNM 43124; one paratype, USNM 43125.

Description.—Both type specimens incomplete; holotype 55 mm long for 85 segments and possibly 120 mm long when complete. Tube constructed of mud and mucus with large shell fragments plastered over anterior end. Anterior end of body rounded (Figure 8a) but middle segments flattened dorsally and 7 mm wide. Color flesh brown, tentacles speckled, and head flecked with dark pigment.

Occipital tentacles with short, 5-ringed ceratophores and rather long tapered ceratostyles. Frontal tentacles ovoid and swollen. Tentacular cirri dorsolateral and well developed. Mandibles with well-developed cutting edges and pale straight shafts. Maxillae rather soft and brown; Mx. I = 1; Mx. II = 8+10; Mx. III = 9+0; Mx. IV = 8+9; Mx. V = 1+1.

First three feet obviously capable of great extension but retracted and wrinkled on holotype. Setae retracted but dissection revealed very long setasacs extending back to segment 45. First three feet with well-developed dorsal and ventral cirri (Figure 8b), but both cirri reduced on subsequent segments. First gill as a single filament on dorsal cirrus of sixth foot but subsequent gills with a maximum of six pinnately arranged filaments (Figure 8c). Ventral cirri all cirriform to fifth foot but thereafter as glandular cushions below setigerous lobes. Setigerous lobes with a low presetal lip and a conical postsetal lobe for first three feet. Postsetal lobe reduced on fourth to tenth foot and represented by a low postsetal boss on subsequent feet.

First three feet with three setal types: (a) six to eight fine, pointed acicula extending into base of dorsal cirrus; (b) about four stout, greatly elongated acicula with curved tips (Figure 8f); and (c) about four much finer setae with two rows of spines along the shaft and hooked tips (Figure 8g). Setae of posterior feet include three or four pointed acicula and numerous winged capillaries (Figure 8e). Bidentate acicular setae (Figure 8h) and fine comb-setae with 15-20 teeth (Figure 8d) from about setiger 25-30. No spinigerous compound setae present.

Remarks.—The length of the curved acicula and spiny-shafted hooks of the first three feet is remarkable. When these feet with their everted setae are fully extended they must reach far beyond the head and provide an efficient means of grasping prey. The hooks in other species of the genus are sometimes compound but here they appear plain and the tips lack sheaths.

Two species of *Rhamphobrachium* have been recorded from the United States, namely *R. agassizi* Ehlers from Florida to South America in 770-805 m and *R. longosetosum* E. and C. Berkeley from California to the Pacific coast of Mexico in 18-740 m. *R. longosetosum* is immediately distinguished from *R. atlanticum* by the possession of spinigerous compound setae in 5th to the 15th foot and branchiae from the 8th to 9th foot. *R. agassizi* (and *R. chuni* Ehlers (1908) from the Indian Ocean) are closer since they too lack spinigerous compound setae, but again the gills start farther back. In *R. agassizi* the first gill appears on the 11th to 17th foot

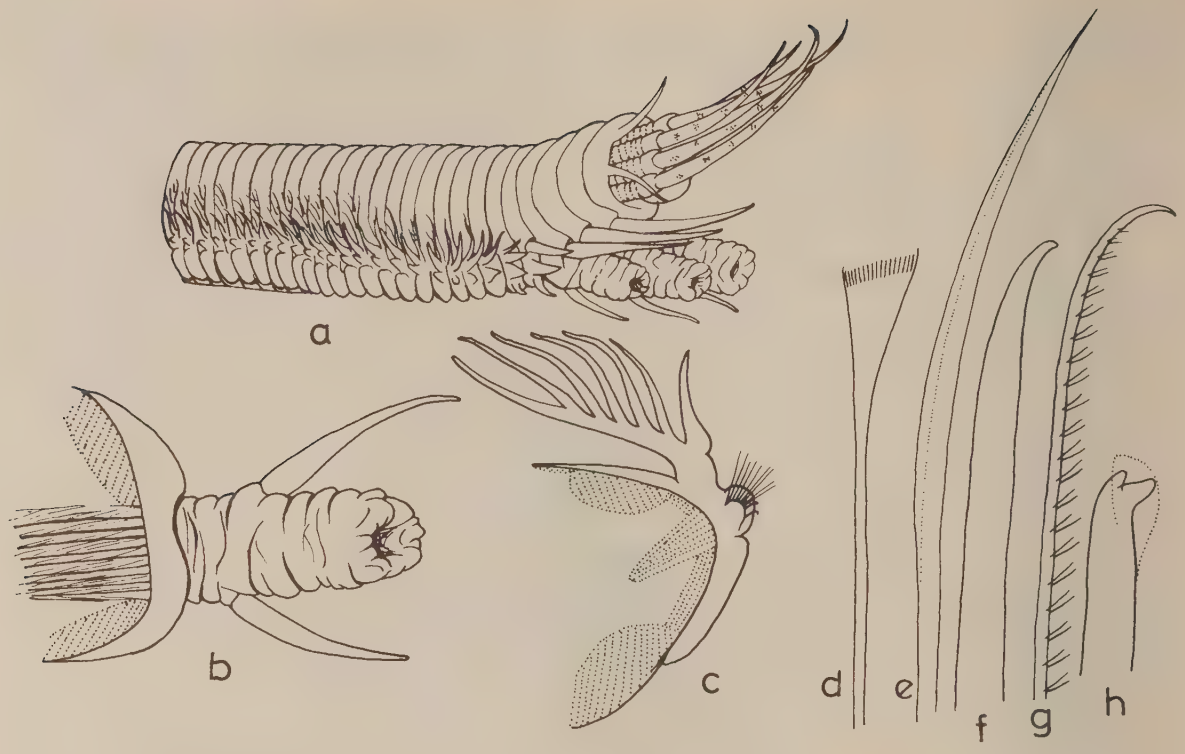

Figure 8.—*Rhamphobrachium atlanticum* n. sp. a, lateral view of anterior end; b, posterior view of 1st foot; c, posterior view of 40th foot; d, comb-seta; e, winged capillary seta; f, tip of enlarged aciculum of 2d foot; g, pseudocompound seta of 2d foot; h, bidentate acicular seta.

and Ehlers' figures (pl. 17 Fig. 1-5 and pl. 18 Fig. 1-9) show the dorsal cirri of the first three feet arising halfway along the setigerous lobes; the maxillae have fewer teeth and the spinules on the shafts of the pseudocompound hooks are no longer than the thickness of the shaft itself, whereas those of *R. atlanticum* are double this. In *R. chuni* the gills start on the 12th foot, the first three feet do not extend beyond the head and the ventral cirri become stout glandular swellings on the 4th foot.

Records.—Off Beaufort in 20 and 120 m (*).

Onuphis (Nothria) conchylega **Sars, 1835**

Onuphis conchylega. - Fauvel, 1923: 415, Fig. 164.
Nothria conchylega. - Hartman, 1944a: 85, Fig. 105-112. - 1968: 673, Fig. 1-6.
Onuphis (Nothria) conchylega. - Pettibone, 1963a: 246, Fig. 65a, pl. 17: Fig. 337-338. - Day, 1967: 425, Fig. 17.13. k-p.

Remarks.—Pettibone (1970b, 251) has redefined *Nothria* Malmgren and has discussed its controversial status and the characters which distinguish it from *Onuphis* Sars, stressing the modification of the first two feet in addition to the single branchial filaments. She has assigned two species to *Nothria* as amended. Unfortunately the modification of the anterior feet in *Onuphis* varies from one species to another; this applies to their size and the degree to which they are rotated forwards, the number of feet with cirriform ventral cirri and the development of the hood over the pseudocompound hooks. Similarly, some species which have a pectinate series of branchial filaments in the adult have only single filaments in juveniles. In view of these variations, I feel that it is more correct as well as more convenient to retain *Nothria* as a subgenus which usefully

splits up the many species of the large genus *Onuphis*.

Records.—Beaufort on sheltered shores and dredgings at 200 m (11, *).

Distribution.—Cosmopolitan from 10 m to abyssal depths.

Onuphis (Nothria) pallidula (Hartman, 1965)

Nothria pallidula Hartman, 1965a: 105, pl. 17: Fig. d-h.

Records.—Common off Beaufort in 10-200 m (21, *).

Distribution.—New England to northeastern South America from 10 to 805 m.

Onuphis eremita Audouin and Milne-Edwards, 1833

Onuphis eremita. - Fauvel, 1923: 414, Fig. 163. - Hartman, 1944a: 75; 1968: 691, Fig. 1-5.
Onuphis (Onuphis) eremita. - Pettibone, 1963a: 248, Fig. 65 c. - Day, 1967: 422, Fig. 17.12. 1-q.

Records.—Common off Beaufort in 3-120 m (21, *).

Distribution.—Cosmopolitan in temperate and tropical seas on sandy mud from 0 to 120 m.

Onuphis nebulosa Moore, 1911

Onuphis nebulosa. - Hartman, 1944a: 75, pl. 4: Fig. 76-85; - 1945: 26; 1968: 699, Fig. 1-6.

Records.—Common in the sounds and off Beaufort in 20-200 m (11, 21, *).

Distribution.—California to Panama and Gulf of Mexico and North Carolina from 0 to 200 m.

Onuphis microcephala Hartman, 1944

Onuphis microcephala Hartman, 1944a: 78, pl. 3: Fig. 67-75; pl. 18: Fig. 339.

Records.—Cape Hatteras area and Beaufort, intertidal (11, 18).

Distribution.—California; Gulf of Mexico; Guatemala; North Carolina; intertidal.

Onuphis magna (Andrews, 1891)

Diopatra magna Andrews, 1891a: 286, pl. 14: Fig. 14-20.
Onuphis magna. - Hartman, 1944a: 70; 1945: 26.

Records.—On intertidal and shallow banks of Beaufort Sound (5, 7, 8, 9, 11, 13).

Distribution.—Pacific coast of Panama, Gulf of Mexico and West Indies to North Carolina in 0-50 m.

FAMILY LUMBRINERIDAE

Key to genera and species

1	Parapodia with postsetal lobe subdivided to form digitiform branchiae (*Ninoe*)	No N.C. record
1′	Parapodia with a single postsetal lobe (*Lumbrineris*)	2
2	Prostomium rounded; body usually short (creeping forms). [Anterior hooks compound]	3
2′	Prostomium conical, sometimes elongated; body always long (burrowing forms)	4
3	Jaws having Mx. III with three to four teeth and Mx. IV with two teeth. Fresh specimens with brown patches on sides of prostomium	*L. inflata*
3′	Jaws having Mx. III with two teeth and Mx. IV with one tooth. Prostomium uniformly pale	*L. coccinea*

4	Hooded hooks appear within first five feet	5
4′	Hooded hooks appear after 8th foot	12
5	All hooded hooks simple	6
5′	Anterior hooded hooks compound, subsequent ones simple.	10
6	Prostomium very long, often pointed. First few feet very small	7
6′	Prostomium broadly conical. First few feet normally developed. [Apex of hooded hooks with a crest of several small denticles above a larger tooth]	9
7	Hooded hooks with a crest of small denticles surmounting a larger tooth. [Mx. II with three teeth. (*L. acuta*)]	No N.C. record
7′	Hooded hooks with two well-developed teeth	8
8	Teeth on hooded hooks at right angles. Mx. II with three teeth; maxillary supports short and broad.	*L. aberrans*
8′	Teeth on hooded hooks almost parallel. Mx. II with five or six teeth; maxillary supports long and slender	*L. paradoxa*
9	Mx. III with two teeth. Postsetal lobe of parapodia always markedly longer than presetal one	*L. tetraura*
9′	Mx. III with one tooth. Postsetal lobe of middle parapodia hardly longer than presetal one	*L.* sp.
10	Mx. II with three teeth; Mx. IV as large white plates with a black margin. [Posterior parapodia with subequal lobes]	*L. albidentata*
10′	Mx. II with four or five teeth. Mx. IV completely dark	11
11	Mx. III with two adjacent teeth. Postsetal lobe obviously longer than presetal in middle and posterior segments	*L. latreilli*
11′	Mx. III as a curved cutting plate with one tooth at the corner. Postsetal and presetal lobes subequal and both short in middle segments, but elongate and slender in far posterior segments	*L. cruzensis*
12	Acicula black. [Simple hooded hooks appear after 20th foot]	13
12′	Acicula pale	14
13	Mx. II with three teeth; Mx. III with one tooth. Anterior hooded hooks with very long blades	*L. brevipes*
13′	Mx. II with four or five teeth; Mx. III with two teeth. Hooded hooks always with short blades	*L. fragilis*
14	Anterior setae include compound spinigerous forms; hooded hooks appear about setiger 18, first few compound, remainder simple. Mx. III with two indistinct teeth	*L. januarii*
14′	No compound spinigerous setae; hooded hooks always simple and appear about 12th-17th foot. Mx. III with one tooth	*L. tenuis*

Lumbrineris inflata Moore, 1911

Lumbrineris inflata Moore, 1911: 289, pl. 19: Fig. 128-132, pl. 20: Fig. 133, 134. - Hartman, 1944a: 160; 1968: 757, Fig. 1-6. - Day, 1967: 435, Fig. 17.16. a-c.
Lumbrineris coccinea Pettibone, 1963a: 257, Fig. 67 d-f (*partim*).

Remarks.—I do not agree with Dr. Pettibone's suggestion that *L. inflata* is synonymous with *L. coccinea*. The maxillae of *L. inflata* are quite characteristic and *L. inflata* is restricted to tropical and subtropical areas.

Records.—North Carolina; common on rocks and coral from low tide to 18 m (14, 20, 21, *).

Distribution.—Circumtropical on rocky shores; intertidal to 30 m.

Lumbrineris coccinea (Renier, 1804)

Lumbriconereis coccinea. - Fauvel, 1923: 432, Fig. 172 g-n.
Lumbrinereis coccinea. - Pettibone, 1963a: 257, Fig. 67 d-f (*partim*). - Day, 1967: 436, Fig. 17.16. i-m.

Records.—Fairly common on coral at 7-18 m off Beaufort (20, *).

Distribution.—Temperate and tropical Atlantic; Mediterranean; Indo-west-Pacific; intertidal to 30 m on rock.

Lumbrineris aberrans Day, 1963

Lumbrineris aberrans Day, 1963a: 411, Fig. 8 a-f; 1967: 439, Fig. 17.17. a-c.
Lumbrineris crassicephala Hartman, 1965a: 117, pl. 20: Fig. c-f.
Lumbrineris platypygos Fauchald, 1970: 106, pl. 18: Fig. a-d.

Description.—Body threadlike, up to 25 mm long. Prostomium very long, highly contractile, usually pointed, occasionally sausage-shaped. Mandibles delicate and tapered to long slender shafts in contact throughout. Dental formula: Mx. I = (2-3) + (2-3), (main fangs indistinctly bidentate or even tridentate); II = 3 + 3; III = 1 + 1; IV = 1 + 1 (large oval black plates). Maxillary supports short and broad. First six to eight parapodia very small or rudimentary, subsequent feet larger, with conical postsetal lobes obviously longer than the low presetal ones. One to three broad-winged capillary setae from first foot to posterior feet. One to two simple hooks from setiger 4-6 to posterior end; each hook bidentate with two stout teeth at right angles to one another. Acicula pale.

Remarks—Fauchald's description of *L. platypygos* is almost identical to that given above but the examination of many specimens shows that the shape of Mx. I is more variable than he has indicated.

Records.—Off Beaufort in 5-20 m (21, *).

Distribution.—South Africa (26 m); Bermuda (1,000 m); Pacific coast of Mexico.

Lumbrineris paradoxa Saint-Joseph, 1888

Lumbriconereis paradoxa. - Fauvel, 1923: 434, Fig. 173 a-h.
Lumbrineris paradoxa. - Hartman, 1965a: 119, pl. 20: Fig. a, b.
Lumbriconereis mucronata Ehlers, 1908: 95, pl. 12: Fig. 9-13.

Remarks.—The three species, *L. acuta* Verrill, *L. paradoxa* Saint-Joseph and *L. aberrans* Day, all with characteristically long prostomia, are easily distinguished by the shape of the hooded hooks. In *L. acuta*, as described by Hartman, (1942a: 114, Fig. 10 d.), the hooks have a crest of minute denticles above a larger tooth, as is usual in the genus *Lumbrineris*. In *L. paradoxa* there are two large teeth which are almost parallel and in *L. aberrans* there are two very stout teeth at right angles to one another. I agree with Hartman that *L. mucronata* Ehlers is a synonym of *L. paradoxa*, and it may also be noted that the hooded hook figured by Pettibone, (1963a, Fig. 67 i) for *L. acuta* also refers to *L. paradoxa*.

Records.—Four specimens off Beaufort in 160-200 m (*).

Distribution.—Azores; Bermuda; off Congo River mouth and North Carolina in 44-1,700 m.

Lumbrineris tetraura (Schmarda, 1861)

Lumbrinconereis impatiens. - Fauvel, 1923: 429, Fig. 171 a-i.
Lumbrineris impatiens. - Pettibone, 1963a: 265, Fig. 67 j.

Lumbriconereis tetraura. - Day, 1953: 435 (with synonymy).
Lumbrineris tetraura. - Day, 1967: 439, Fig. 17.16. u-w.

Records.—Virginia to Beaufort, intertidal (11, 17).

Distribution.—Cosmopolitan in temperate and tropical seas; intertidal to 100 m.

Lumbrineris sp.

Description.—Length 10-15 mm. Prostomium conical. Mandibular shafts in contact throughout. Mx. I = 1+1; Mx. II = 4+4 (or 3+3 in small, 10-mm specimens); Mx. III = 1+1 (cutting plates smaller than Mx. IV); Mx. IV = 1+1. Anterior feet with a low presetal lobe and a longer postsetal one; middle feet small with pre- and postsetal lobes subequal; posterior feet with postsetal lobe definitely longer than presetal one. Winged capillaries from the first foot to middle of body. Simple hooks with very elongate blades resembling broken-tipped capillaries from third or fourth foot to about 20th and short-bladed hooks thereafter. Acicula pale.

Remarks.—These small specimens do not quite fit any known species and may be juveniles whose characters change later. In *L. tenuis* the hooks appear in the 12th-17th foot. In *L. brivicirra* Schmarda, recorded from South Africa, Australia, New Zealand, Chile, and Japan, Mx. II has five teeth but the other characters are similar.

Records.—Twenty-three specimens in 40-200 m off Beaufort (21, *).

Lumbrineris albidentata Ehlers, 1908

Lumbriconereis albidentata Ehlers, 1908: 97, pl. 13: Fig. 7-13.
Lumbrineris albidentata. - Day, 1960: 357, Fig. 12 a-b; 1967: 434, Fig. 17.15. o-v.

Description.—Body fairly stout, up to 75 mm long. Prostomium broadly conical. Mandibles characteristic with broad divergent shafts forming a rough X. Maxillae with Mx. I = 1+1; II = 3+3 (large stout teeth); III = 1+1; IV = 1+1 (very large white plates with black margins). Anterior feet with well-developed presetal lobes and slightly longer and broader postsetal ones; middle feet with subequal lobes; posterior feet with equal tapered lobes curving upward but not as long as setae. Winged capillaries from first foot to middle of body. Four to five compound hooks from first foot to 12th-17th and simple hooks thereafter. Acicula pale.

Records.—Common off Beaufort in 40-200 m (21, *); This is a new record for the United States.

Distribution.—South Africa; 30-200 m in sandy mud.

Lumbrineris latreilli (Audouin and Milne-Edwards, 1833)

Lumbriconereis latreilli. - Fauvel, 1923: 431, Fig. 171 m-r.
Lumbrineris latreilli. - Hartman, 1944a: 158, pl. 9: Fig. 213-216. - Pettibone, 1963a: 258, Fig. 67 a-c. - Day, 1967: 438, Fig. 17.16. p-t.

Records.—Off Beaufort in 10-40 m (14, 17, 21, *).

Distribution.—Cosmopolitan from low tide to 2,000 m.

Lumbrineris cruzensis Hartman, 1944

Figure 9a-i

Lumbrineris cruzensis Hartman, 1944a: 165, pl. 12: Fig. 263-269; 1968: 751, Fig. 1-6. - Fauchald, 1970: 83, pl. 12: Fig. g-j.

Description.—Pale, slender worms 35 mm long by 0.7 mm for 150 segments. Prostomium (Figure 9a) bluntly conical. Mandibles (Figure 9c) white, with flaring, well calcified cutting plates and slender shafts in contact throughout. Maxillae (Figure 9b) dark brown and well chitinized; Mx. I = 1+1; II = 4+4 (in exceptional cases 3+3 or 5+5); III = 1+1 (curved cutting plates); IV = 1+1 (larger plates than Mx. III). Anterior feet (Figure 9g) well developed, each with a low presetal lobe and a compressed, oval postsetal one. Middle feet (Figure 9h) characteristically small with presetal and postsetal lobes conical and subequal. Far posterior feet (Figure 9i) with slender elongated lobes slightly shorter than setae and presetal lobe slightly

longer than postsetal. Winged capillaries (Figure 9f) from first foot to middle of body and one or two sometimes persisting in posterior feet. Compound hooks (Figure 9d) from 3d or 4th foot to 20th and simple hooks (Figure 9e) thereafter. All hooks with an oblique series of denticles above larger first tooth. Acicula pale.

Remarks.—This species is one of the commonest worms on the continental shelf of North Carolina. The specimens are almost always broken and the characteristic terminal feet with their subequal filamentous lobes are usually missing. For this reason and because there are several species with compound hooks anteriorly and closely related to *L. cruzensis*, the characters of these North Carolina specimens have been described in detail. The shape of Mx. III is important but difficult to describe for the statement that Mx. III has one tooth is not really accurate; actually it has no teeth, only a cutting edge with an angular corner. *L. magalhaenses* Kinberg, *L. gracilis* Ehlers, and *L. limicola* Hartman, are all said to have "one tooth" on Mx. III and it is necessary to see the filamentous subequal lobes on the far posterior feet to distinguish *L. cruzensis*. The description of *L. cruzensis* given by Hartman (1944a) fits the North Carolina material in all respects except that Mx. III are smaller than Mx. IV.

Records.—Abundant off Beaufort in 20-200 m (21, *). This is a new record for the Atlantic coast.

Distribution.—British Columbia to Pacific coast of Mexico; about 10 m to "slope depths".

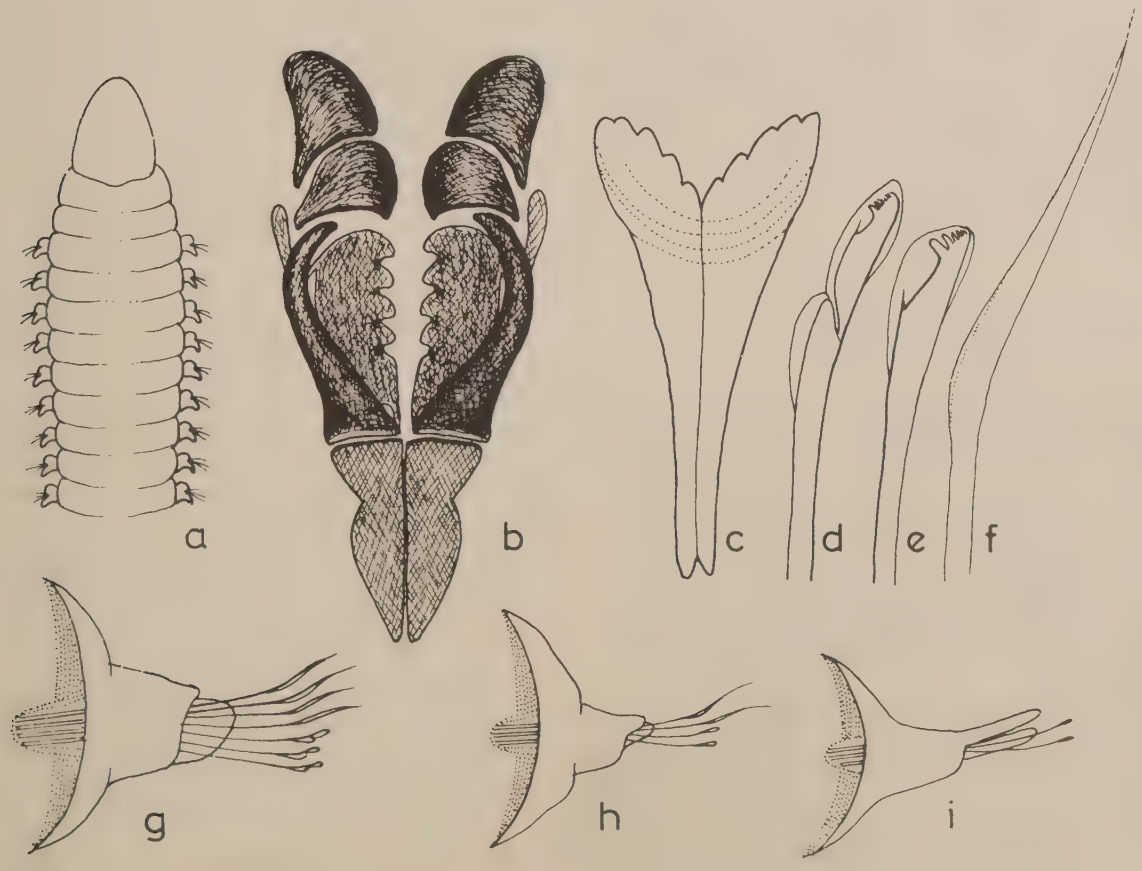

Figure 9.—*Lumbrineris cruzensis* a, anterior end; b, maxillae; c, mandibles; d, compound hook; e, simple hook; f, winged capillary seta; g, anterior view of anterior foot; h, anterior view of middle foot; i, anterior view of far posterior foot.

Lumbrineris brevipes (McIntosh, 1903)

Ninoe fusca Moore, 1911: 285, pl. 19: Fig. 110-118.
Lumbrineris brevipes. - Pettibone, 1963a: 260, Fig. 68 h.

Records.—Off North Carolina (17).

Distribution.—Massachusetts to North Carolina; North West Spain; southern California; Antarctica; in 100 to 3,000 m.

Lumbrineris fragilis (Müller, 1776)

Lumbriconereis fragilis. - Fauvel, 1923: 430, Fig. 17 k-l.
Lumbrineris fragilis. - Pettibone, 1963a: 262, Fig. 69.

Records.—Common off Beaufort in 80-200 m (21, *).

Distribution.—A cold-water species extending from Arctic southward in the Atlantic and Pacific at deeper and deeper levels and reaching North Carolina, Azores, and Mediterranean; intertidal to 3,000 m.

Lumbrineris januarii (Grube, 1878)

Lumbrineris januarii. - Hartman, 1944a: 167, pl. 13: Fig. 278-284.

Description.—Length up to 80 mm. Prostomium conical; maxillae with Mx. I = 1+1; II = 5+5; III = 2+2 (second tooth indistinct); IV = 1+1. Parapodia with postsetal lobe longer than presetal but shorter than setae even in posterior feet. Compound spinigerous setae as well as winged capillaries from first few feet to about 25th. Compound hooks from about 18th to 30th foot and simple hooks thereafter. Acicula pale.

Records.—Off Beaufort in 40 m (*). This is the first record from the United States.

Distribution.—West Indies to Brazil in 10-40 m.

Lumbrineris tenuis Verrill, 1873

[?] *Lumbriconereis atlantica* Kinberg, 1869: 568; 1858-1910: 47, pl. 19: Fig. 43. - Hartman, 1948: 90, pl. 13: Fig. 1, 2.
Lumbrineris tenuis. - Hartman, 1942a: 54. - Pettibone, 1963a: 264, Fig. 70 (with synonymy).
Lumbrineris atlantica. - Hartman, 1965a: 116, pl. 19: Fig. A. * Day, Field, and Montgomery, 1971: 122.

Description.—Body slender, 30-60 mm long. Prostomium bluntly conical. Mandibular shafts delicate and in contact throughout. Maxillae with Mx. I = 1+1; II = (4-6) + (4-6); III = 1+1; IV = 1+1. Mx. II usually with four or five teeth but occasionally six (Hartman, 1942). Mx. III as a cutting plate smaller than Mx. IV. Anterior feet with a low presetal lobe and a larger, compressed postsetal one. Middle feet rather small with subequal presetal and postsetal lobes. Posterior feet with longer lobes, the presetal being obviously shorter than the postsetal. Winged capillary setae from first foot to middle feet. Hooded hooks from 12th-17th foot or exceptionally from 9th (Pettibone, 1963a). All hooks simple; anterior ones with long blades but posterior ones with short blades and four or more denticles above larger first tooth. Acicula pale.

Remarks.—I am indebted to Dr. Pettibone for specimens of *L. tenuis* and Dr. Hartman for specimens of *L. atlantica* from 466 to 508 m off Massachusetts, described in Hartman (1965a). They appear to be identical though Dr. Hartman's illustration of the maxillae (pl. 19: Fig. a) represents a form with four teeth on Mx. II whereas the specimen I dissected had five teeth. The difficulty is to decide what name should be used. *L. tenuis* Verrill has been well described. *L. atlantica* Kinberg from La Plata has priority but Kinberg's description was very brief; he groups *L. atlantica* with others having Mx. III unidentate but his figure does not indicate this and when Hartman (1948) reexamined the type the jaws had been removed. Again Kinberg did not figure the far posterior feet. Since there are several closely related species some doubt must remain as to whether the specimens described by Hartman (1965a) off Massachusetts should really be referred to *L. atlantica*. In view of this I have retained the well established name *L. tenuis*.

Records.—Common off Beaufort in 20 m (21, *).

Distribution.—Maine to Florida; intertidal to abyssal depths.

FAMILY ARABELLIDAE

Key to genera and species

1	Parapodia with one or more stout projecting acicula as well as fine-tipped internal ones	2
1′	Parapodia without a stout projecting aciculum (*Arabella*)	5
2	Maxilla I with first tooth greatly enlarged forming a pair of fangs or pincers (*Drilonereis*)	3
2′	Maxilla I with first tooth not much larger than others (*Notocirrus*). [Mandibles present. Mx. I with 3-4 small denticles at base]	*N. spiniferus*
3	Mx. I with dentate bases	4
3′	Mx. I with smooth bases. [Mandibles usually absent]	*D. filum*
4	Parapodia inconspicuous on anterior segments but well developed and bilobed posteriorly. Mandibles very small, sometimes missing	*D. longa*
4′	Parapodia small on anterior segments, but larger posteriorly, though always with a single (postsetal) lobe. Mandibles obvious	*D. magna*
5	Setae are all winged capillaries	*Arabella iricolor*
5′	Setae include winged capillaries and an inferior, blunt aciculum with a small tapered blade	*Arabella mutans*

Notocirrus spiniferus (Moore, 1906)

Notocirrus spiniferus. - Pettibone, 1963a: 275, Fig. 73 a-i.

Records.—Chesapeake Bay, intertidal and Beaufort in 5 m (17, *).

Distribution.—Massachusetts to North Carolina; intertidal to 16 m.

Drilonereis filum (Claparède, 1868)

Drilonereis filum. - Fauvel, 1923: 436, Fig. 174 a-h. - Hartman, 1944a: 180; 1968: 799, Fig. 1, 2.

Records.—Cape Hatteras area, intertidal (18).

Distribution.—Mediterranean; Atlantic coast of France; Florida; Panama; southern California; low tide and shallow dredgings.

Drilonereis longa Webster, 1879

Drilonereis longa. - Hartman, 1944a: 178; - 1968: 801, Fig. 1. - Pettibone, 1963a: 272, Fig. 72 a-h.

Records.—North Carolina, intertidal (3, 5, 11, 17, 18).

Distribution.—Massachusetts to Georgia and the West Indies; Washington; southern California; intertidal to 2,452 m.

Drilonereis magna Webster and Benedict, 1887

Drilonereis magna. - Pettibone, 1963a: 273, Fig. 71 h.

Records.—North Carolina, intertidal to 200 m (11, 13, 17, 18, 21, *).

Distribution.—Newfoundland to South Carolina and the Gulf of Mexico; California to western Mexico; low tide to 1,000 m.

Arabella iricolor (Montagu, 1804)

Arabella iricolor. - Fauvel, 1923: 438, Fig. 175 a-h. - Hartman, 1944a: 173; 1968: 789, Fig. 1-6. - Pettibone, 1963a: 269, Fig. 71 a-e. - Day, 1967: 446, Fig. 17.18. i-m.

Records.—North Carolina, intertidal to 80 m (3, 5, 7, 9, 11, 13, 18, 20, *).

Distribution.—Cosmopolitan in temperate and tropical seas extending from low tide to 83 m.

Arabella mutans (Chamberlin, 1919)

Cenothrix mutans. - Chamberlin, 1919: 329, pl. 61: Fig. 1-9, pl. 62: Fig. 1.
Arabella mutans. - Hartman, 1944a: 173. - Day, 1967: 446, Fig. 17.18. f-h.

Records.—Off Beaufort in 5-160 m (*).

Distribution.—Pacific coasts of tropical America; Easter Island; Galapagos Islands; Florida; Cape Verde Islands; South Africa to tropical East Africa; intertidal to 160 m.

FAMILY DORVILLEIDAE

Key to genera and species

1	Dorsal cirri ovoid, without cirrophores or internal acicula and arise from ends of parapodia	2
1′	Dorsal cirri elongate, mounted on cirrophores with internal acicula and arise from bases of parapodia (*Dorvillea*)	3
2	Palps as mere papillae; antennae similar. No forked setae (*Ophryotrocha*)	*O. puerilis*
2′	Palps elongate with terminal ovoid palpostyles. Superior forked setae present (*Protodorvillea*). [A dorsal cirrus on setiger 1. Antenna two-jointed]	*P. kefersteini*
3	No dorsal cirrus on setiger 1	4
3′	A dorsal cirrus on setiger 1. [Superior forked setae present with slightly unequal prongs]	*D. rudolphi*
4	No superior forked setae	*D. sociabilis*
4′	Superior forked setae present with very unequal prongs	*D. caeca*

Ophryotrocha puerilis Claparède and Mecznikow, 1869

Ophryotrocha puerilis. - Fauvel, 1923: 450, Fig. 180 a-h. - Hartman, 1944a: 191, pl. 15: Fig. 325-330; 1968: 823, Fig. 1-6. - Day, 1967: 452, Fig. 17.20. a-f.

Records.—Beaufort, intertidal (11).

Distribution.—Cosmopolitan in warm and tropical seas occurring in aquaria and on protected shores.

Protodorvillea kefersteini (McIntosh, 1869)

Protodorvillea biarticulata. Day, 1963a: 414, Fig. 8 g-l; 1967: 452, Fig. 17.20. g-l.
Protodorvillea kefersteini. - Hobson, 1971: 542, Fig. 8 a-d.
Protodorvillea biarcticulata (sic). - Day, Field, and Montgomery, 1971: 122.

Description.—Length 5 mm for 50-100 segments. Prostomium rounded in front with an annulus in front of antennae. Anterior pair of eyes minute, often faded, posterior pair larger. Antennae small, club-shaped, often weakly biarticulate. Palps long, wrinkled but terminal palpostyles distinct and oval. Parapodia long

with a retractile presetal lip; an oval dorsal cirrus at distal end of first and all subsequent feet; ventral cirri similar to dorsal ones. Superior setae include one or two long tapered capillaries serrated at base of blade and one or two shorter forked setae with subequal prongs flanged on inner margins. Inferior setae compound with bidentate falcigerous blades varying in length.

Remarks.—The only other species of *Protodorvillea* recorded from the Atlantic coast of United States is *P. minuta* Hartman from deep waters off New England. It is easily distinguished by its minute papilliform palps. Hobson (1971) has redescribed the type of *Staurocephalus kefersteini* McIntosh from Scotland and her account shows that *P. biarticulata* Day from South Africa is synonymous. *P. gracilis* (Hartman) from California and *P. recuperata* Banse and Nichols from Puget Sound are probably synonyms of *P. kefersteini* too but Mrs. Hobson has provisionally retained the name *P. gracilis* to cover both.

Records.—Thirteen specimens in 10-120 m off Beaufort (21, *).

Distribution.—North Atlantic from Scotland to Ireland and Massachusetts; South Africa; intertidal to 120 m.

Dorvillea rudolphi (Delle Chiaje, 1828)

Staurocephalus rudolphi. - Fauvel, 1923: 446, Fig. 178 a-p.

Dorvillea rudolphi. - Hartman, 1945: 27, pl. 5: Fig. 2, 6. - Day, 1967: 457, Fig. 17.21. d-j.

Stauronereis rudolphi. - Pettibone, 1963a: 231, Fig. 60.

Records.—North Carolina, intertidal to 120 m (3, 9, 11, 13, 17, 18, 20, 21, *).

Distribution.—Mediterranean; temperate and tropical Atlantic from Norway to South Africa and Massachusetts to the West Indies; Pacific from British Columbia to Chile; intertidal to 265 m.

Dorvillea sociabilis (Webster, 1879)

Dorvillea sociabilis. - Hartman, 1945: 27, pl. 5: Fig. 1, 4, 5; 1951: 66, pl. 8: Fig. 3, 5.

Records.—North Carolina, common from low tide to 160 m (3, 5, 11, 13, 14, 15, 18, 20, *).

Distribution.—Virginia to Florida; intertidal to 160 m.

Dorvillea caeca (Webster and Benedict, 1884)

Stauroneris caecus. - Pettibone, 1963a: 233, Fig. 61.

Records.—Two specimens off Beaufort on coral in 10 m (*).

Distribution.—North Japan Sea; Washington; Gulf of St. Lawrence to Massachusetts; intertidal to 154 m.

FAMILY SPIONIDAE

Key to genera and species

1	Setiger 5 enlarged and bears stout burrowing hooks laterally	2
1′	Neither setiger 4 nor 5 enlarged; no stout burrowing hooks	10
2	Branchiae start on setiger 2 (*Boccardia*)	No N.C. record
2′	Branchiae start on setiger 6-11 (*Polydora*)	3
3	Fifth hooks without accessory teeth but sometimes with a twisted sheath on concave side of apex	4
3′	Fifth hooks with an accessory tooth	7
4	Fifth hooks flanged or with a twisted sheath. [No specialized posterior notosetae]	5
4′	Fifth hooks quite plain. [Hooded hooks from setiger 7].	6

5	Fifth hooks with a lateral flange. Hooded hooks from setiger 10-17. Pygidium with several small papillae. [Lives in shells of hermit crabs]	*P. commensalis*
5′	Fifth hooks with a twisted sheath or ridge on concave side of apex. Hooded hooks from setiger 7. Pygidium saucer-shaped. [No notosetae on first foot]	*P. websteri*
6	Notosetae present on first foot. Posterior notosetae include 2-3 short spines slightly stouter than the long capillaries	*P. caeca*
6′	No notosetae on first foot. No specialized posterior notosetae	*P. socialis*
7	Fifth hooks with a hairy tuft between main and accessory tooth. [No eyes. Notosetae present on first foot. No specialized posterior notosetae]	*P. hartmanae*
7′	Fifth hooks without hairs between main and accessory tooth	8
8	Fifth hooks with two teeth partly encircled by a shelf or flange. Posterior notosetae include large hooked spines	*P. colonia*
8′	Fifth hooks normally bidentate without an encircling flange. No specialized posterior notosetae	9
9	Only four pairs of gills on setigers 7 to 10. Notosetae absent from first foot. [Body very small]	*P. tetrabranchia*
9′	About 14 pairs of gills. No notosetae on first foot. An occipital tentacle on prostomium. [Bifid, bristled setae accompany fifth hooks]	*P. ligni*
10	Branchiae entirely absent. Neurosetae of first foot include a stout hook-shaped seta. (*Spiophanes*)	11
10′	Branchiae present. No specialized seta on first foot	12
11	Prostomium with pointed lateral projections. No occipital tentacle. Hooded hooks bidentate throughout. [Notopodial lobe of setiger 1 well developed]	*S. bombyx*
11′	Prostomium without lateral projections or occipital tentacle. Anterior hooded hooks minutely tridentate, posterior ones bidentate	*S. wigleyi*
12	Branchiae from setiger 1	13
12′	Branchiae from setiger 2	20
13	Branchiae present on 20 setigers or more	14
13′	Branchiae on setiger 1 or 1-3 only	19
14	Posterior notosetae include hooded hooks. Branchiae absent from posterior segments. [Prostomium bilobed in front. (*Scolecolepides*)]	*S. viridis*
14′	Posterior notosetae without hooded hooks. Branchiae continue to posterior segments.	15

15	Middle parapodia with small accessory branchiae. Anterior branchiae fused to notopodial lamellae [Prostomium pointed. (*Dispio*)]	*D. uncinata*
15′	Middle parapodia without accessory branchiae. Anterior branchiae partly fused or free from notopodial lamellae	16
16	Prostomium rounded or expanded in front (*Spio*)	17
16′	Prostomium with distinct lateral peaks (*Malacoceros*)	No N.C. record
17	Prostomium expanded in front and bears several eyespots. No occipital tentacle. Hooded hooks in neuropodia from setiger 28-32.	*S. multioculata*
17′	Prostomium rounded in front and bears 4 eyespots. Occipital tentacle present or absent. Hooded hooks in neuropodia from setiger 10-11	18
18	No occipital tentacle. Head with brown markings. Hooks bidentate to tridentate, 6-9 per foot	*S. pettiboneae*
18′	Occipital tentacle present. Head without brown markings. Hooks always bidentate, 15-20 per foot	*S. setosa*
19	One pair of smooth branchiae on setiger 1. A dorsal crest across setiger 2. (*Streblospio*)	*S. benedicti*
19′	Three pairs of pinnate branchiae (or scars thereof) on setigers 1 to 3. A dorsal crest across setiger 1. [Peristome folded round sides of prostomium (*Paraprionospio*)]	*P. pinnata*
20	Posterior notopodia with hooded hooks	21
20′	Posterior notopodia without hooded hooks	29
21	Branchiae fused to notopodial lamellae anteriorly, becoming separate later and continuing to posterior segments. Pygidium with a cushion below anus (*Scolelepis*)	*S. squamata*
21′	Branchiae free from notopodial lamellae anteriorly and confined to anterior part of body. Pygidium with anal cirri	22
22	Prostomium with an occipital tentacle. Branchiae never pinnate (*Aonides*) [Hooded hooks bidentate].	*A.* sp.
22′	Prostomium without an occipital tentacle. Branchiae either pinnate, smooth or both (*Prionospio*)	23
23	All branchiae smooth and number 4 to 40 pairs (subgenus *Minuspio*)	24
23′	At least one pair of branchiae pinnate and number 4 or 5 pairs	25
24	About 6 pairs of long branchiae. Hooded hooks multidentate. Genital pouches between middle neuropodia of adults	*P. (M.) cirrifera*
24′	About 11 pairs of normal branchiae. Hooks with one tooth above main fang. No genital pouches	*P. (M.) cirrobranchiata*
25	Five pairs of branchiae with 1st, 4th, and 5th pinnate. [No dorsal crest across setiger 7]	*P. heterobranchia*
25′	Four pairs of branchiae	26

26	Only the 4th pair of branchiae pinnate. Hooded hooks bidentate. Prostomium square in front	*P. dayi*
26′	First and 4th pair of branchiae pinnate. Hooded hooks multidentate. Prostomium rounded in front	27
27	A dorsal crest across setiger 7 or setigers 7 and 9.	28
27′	No dorsal crest across setiger 7 or 9	*P. steenstrupi*
28	A dorsal crest across setiger 7 only	*P. fallax*
28′	A dorsal crest across setiger 7, a low ridge across setiger 8, and a crest across setiger 9	*P. cristata*
29	Prostomium without an occipital tentacle. [Branchiae free from notopodial lamellae and continue to posterior segments (*Microspio*). Prostomium with a brown patch. Hooded hooks from setiger 12 with 3-5 denticles above main fang]	*M. pigmentata*
29′	Prostium with an occipital tentacle	30
30	Prostomium rounded. Branchiae free from notopodial lamellae and absent from posterior segments. Membranous genital pockets between neuropodia of middle segments (*Laonice*)	*L. cirrata*
30′	Prostomium pointed. Branchiae fused to notopodial lamellae in anterior segments but free later and continue to posterior segments. No pockets between neuropodia (*Nerinides*). [Hooded hooks unidentate]	*N. unidentata*

Polydora commensalis Andrews, 1891

Polydora commensalis Andrews, 1891b: 291, pl. 15: Fig. 27. - Hartman, 1945: 32; 1969: 133, Fig. 1-4. - Blake, 1969: 815, Fig. 3; 1971: 17, Fig. 11. - Foster, 1971: 20, Fig. 1-12.

Records.—Cape Hatteras area and Beaufort, intertidal to a few meters (5, 6, 11, 18, 22)

Distribution.—Massachusetts to North Carolina; Caribbean; Pacific Siberia to California and western Mexico; intertidal to 30 m; commensal with hermit crabs.

Polydora websteri Hartman, 1943

Polydora caeca. - Webster, 1879: 252, pl. 9: Fig. 119-122 (*non* Oersted).

Polydora websteri Hartman, 1945: 33; 1951: 81; 1969: 151, Fig. 1-5. - Blake, 1969: 814, Fig. 2; 1971: 6, Fig. 3. - Foster, 1971: 26, Fig. 30-36.

Records.—Cape Hatteras to Beaufort, intertidal and dredged (3, 5, 11, 13, 15, 18, 19, ? *).

Distribution.—Newfoundland to Gulf of Mexico; Oregon to Southern California; Hawaii; intertidal to 100 m.

Polydora caeca (Oersted, 1843)

Figure 10a-d

Polydora caeca. - Fauvel, 1927: 52, Fig. 18 a-k. - Day, 1967: 469, Fig. 18.3. e-h.

Description.—Length up to 20 mm. Prostomium notched in front and produced back as a ridge to setiger 2. Four eyes. Setiger 1 with notosetae. Fifth hooks (Figure 10a) plain and unidentate. Gills from setiger 7-9 to middle of body at least. Hooded hooks (Figure 10d) from setiger 7. Specialized posterior notosetae (Figure 10c) as two to four straight spines only slightly stouter than accompanying capillaries (Figure 10b). Pygidium saucer-shaped. Juveniles with scattered pigment flecks on anterior segments.

Remarks.—*P. caeca* is closely related to *P. socialis* and the small differences between

them have been discussed by Mesnil (1896) and Hartman (1941a) among others. The most useful distinction is the presence of notosetae in setiger 1 of *P. caeca*. In *P. socialis* the ridge from the prostomium reaches setiger 4 and the gills are still present on posterior segments. Further, *P. socialis* lacks spines in the posterior notopodia but, as these are not distinct in *P. caeca*, this is not an obvious character.

Records.—Off Beaufort in 5-80 m (*). This is a new record for the United States.

Distribution.—Arctic; Atlantic from Greenland to South Africa; Indian Ocean; Mediterranean; intertidal to 30 m.

Polydora socialis (Schmarda, 1861)

Polydora socialis. - Hartman, 1941a: 310, pl. 48: Fig. 41, 42; 1945: 33; 1969: 147, Fig. 1, 2. - Blake, 1969: 816, Fig. 5; 1971: 20, Fig. 13, 14.

Records.—Cape Hatteras area and Beaufort; intertidal to a few meters (11, 13, 18).

Distribution.—California to Chile; North Carolina and Gulf of Mexico; intertidal to 10 m.

Polydora hartmanae Blake, 1971

Polydora anoculata. - Hartman, 1945: 33 (*non P. anoculata* Moore, 1907).

Polydora hartmanae Blake, 1971: 25, Fig. 16.

Records.—Shallow dredging in Beaufort Sound (11).

Distribution.—North Carolina; shallow dredgings.

Polydora colonia Moore, 1907

Polydora colonia Moore, 1907: 199, pl. 15: Fig. 18-23. - Hartman, 1945: 32. - Blake, 1971: 15, Fig. 10.

Polydora hoplura inhaca Day, 1957: 99, Fig. 6 k-i; 1967: 468, Fig. 18.2. n.

Records.—Beaufort Sound, intertidal (11).

Distribution.—North West Pacific; Massachusetts to North Carolina and Jamaica; Moçambique; intertidal.

Polydora tetrabranchia Hartman, 1945

Polydora tetrabranchia Hartman, 1945: 34, pl. 1: Fig. 7-10. - Blake, 1971: 10, Fig. 7.

Records.—Dredged from Bogue Sound, N.C. (11).

Distribution.—North Carolina; 3 m.

Polydora ligni Webster, 1879

Polydora ligni. - Hartman, 1941a: 309, pl. 48: Fig. 47-49; 1945: 32; 1969; 137, Fig. 1-6. - Blake, 1971: 5, Fig. 1, 2. - Foster, 1971: 22, Fig. 13-21.

Records.—Cape Hatteras to Beaufort; intertidal to a few meters. (11, 13, 18, *).

Distribution.—Both sides of United States in temperate seas; Gulf of Mexico; northern Europe; estuarine, intertidal, and shallow dredgings.

Spiophanes bombyx (Claparède, 1870)

Spiophanes bombyx. - Fauvel, 1927: 41, Fig. 14 a-i. - Hartman, 1951: 85; 1969; 181, Fig. 1-5. - Day, 1967: 474, Fig. 18.5. a-e. - Foster, 1971: 40, Fig. 66-75.

Remarks.—In Day (1967), I described *S. bombyx* as having an occipital tentacle; this is an error since this species lacks an occipital tentacle.

Records.—Cape Hatteras to Beaufort from low tidemark on sheltered beaches to dredgings in 200 m (11, 13, 18, 21, *).

Distribution.—Atlantic from Sweden and New England to the Falkland Islands and South Africa; eastern Pacific from Canada to California; intertidal to 200 m.

Spiophanes wigleyi Pettibone, 1962

Figure 10e, f

Spiophanes wigleyi Pettibone, 1962: 83, Fig. 5, 6. - Hartman, 1965a: 153, pl. 28: Fig. e, f. - Foster. 1971: 43, Fig. 76-85.

Remarks.—The original description of *S. wigleyi* states that the hooded hooks are bidentate. My specimens from North Carolina showed a

small third tooth above two large ones. Dr. Pettibone kindly sent me a specimen of *S. wigleyi* from Massachusetts and this resolved the discrepancy. The first few hooks on setigers 15-18 (Figure 10e) have a vertical series of three teeth; in the following segments the small uppermost tooth becomes minute and in posterior segments it is absent (Figure 10f). This has also been noted by Foster (1971).

Records.—Off Beaufort in 40-200 m (21, *).

Distribution.—Massachusetts; Gulf of Mexico; South Africa; 0-200 m.

Scolecolepides viridis (Verrill, 1873)

Scolecolepides viridis. - George, 1966: 76, Fig. 1 a-f. - Foster, 1971: 37, Fig. 57-65.

Records.—Cape Hatteras area, intertidal (18).

Distribution.—Newfoundland to South Carolina; in mudbanks of estuaries to 37 m.

Dispio uncinata Hartman, 1951

Dispio uncinata Hartman, 1951: 87, pl. 22: Fig. 1-5, pl. 23: Fig. 1-4; 1969: 105, Fig. 1-4. - Foster, 1971: 73, Fig. 161-174.

Records.—Off Beaufort in 3-40 m (22, *).

Distribution.—Massachusetts to the West Indies and the Gulf of Mexico; southern California; intertidal to 40 m.

Spio cf. *multioculata* (Rioja, 1919)

(?) *Spio multioculata.* - Fauvel, 1927: 44, Fig. 15 h-o.

Description.—Only two fragmentary specimens, the larger 1.7 mm for 18 segments. No color markings. Prostomium T-shaped with blunt anterolateral projections; several eyespots; no occipital papilla. Gills from setiger 1 to end of fragment (setiger 18); all gills larger than notopodial lamellae and separated from them. Neuropodial lamellae broadly oval throughout. Only capillary setae in notopodia. Neurosetae mainly capillaries with sabre-setae from 8th foot. No hooded hooks before end of fragment.

Remarks.—So far as can be seen from these small fragmentary specimens, the characters agree perfectly with those of *S. multioculata.* The absence of neuropodial hooks is not surprising as they do not occur on *S. multioculata* before setiger 28-32. However this species has not been recorded from the United States and larger and better preserved specimens are required to confirm the record.

Records.—Two specimens off Beaufort in 120 m (*).

Distribution.—(of *S. multioculata*) Bay of Biscay; intertidal.

Spio pettiboneae Foster, 1970

Figure 11a-d

Spio (Spio) pettiboneae Foster, 1971: 35, Fig. 48-56.

Spio filicornis var. nov. Day, Field, and Montgomery, 1971: 122.

Description.—Body up to 11 mm long; head (Figure 11a, b) and anterior segments flecked with brown both dorsally and ventrally. Prostomium rounded in front and extending as a blunt keel to setiger 2. Four subdermal eyes but no occipital tentacle. Peristome broad and partly fused to setiger 1. Setiger 1 with small notopodial and neuropodial lobes and a large gill. Subsequent parapodia (Figure 11c) similar but larger, each with a well-marked presetal lobe, a short, blunt postsetal lobe and a large straplike gill arching over dorsum. Anterior gills fused basally to postsetal lamellae but posterior ones almost separate. Neuropodia with small, oval postsetal lobes throughout. Notosetae as capillaries with finely punctate blades. Anterior neurosetae similar but shorter. Hooded hooks from setiger 11, six or seven per foot. Anterior hooks bidentate (Figure 11d), subsequent ones with superior tooth cleft forming tridentate hooks.

Remarks.—All the specimens from Beaufort were broken with the largest anterior fragment having 24 segments. They were originally named a new variety of *S. filicornis* and I am indebted to Dr. Foster for informing me that she had found the same form in the Gulf of Mexico and named it *S. (S.) pettiboneae.* The description given above is based on the Beaufort material but it agrees with that of Foster (1971) with two exceptions. My specimens, which were presumably younger than those of Dr. Foster,

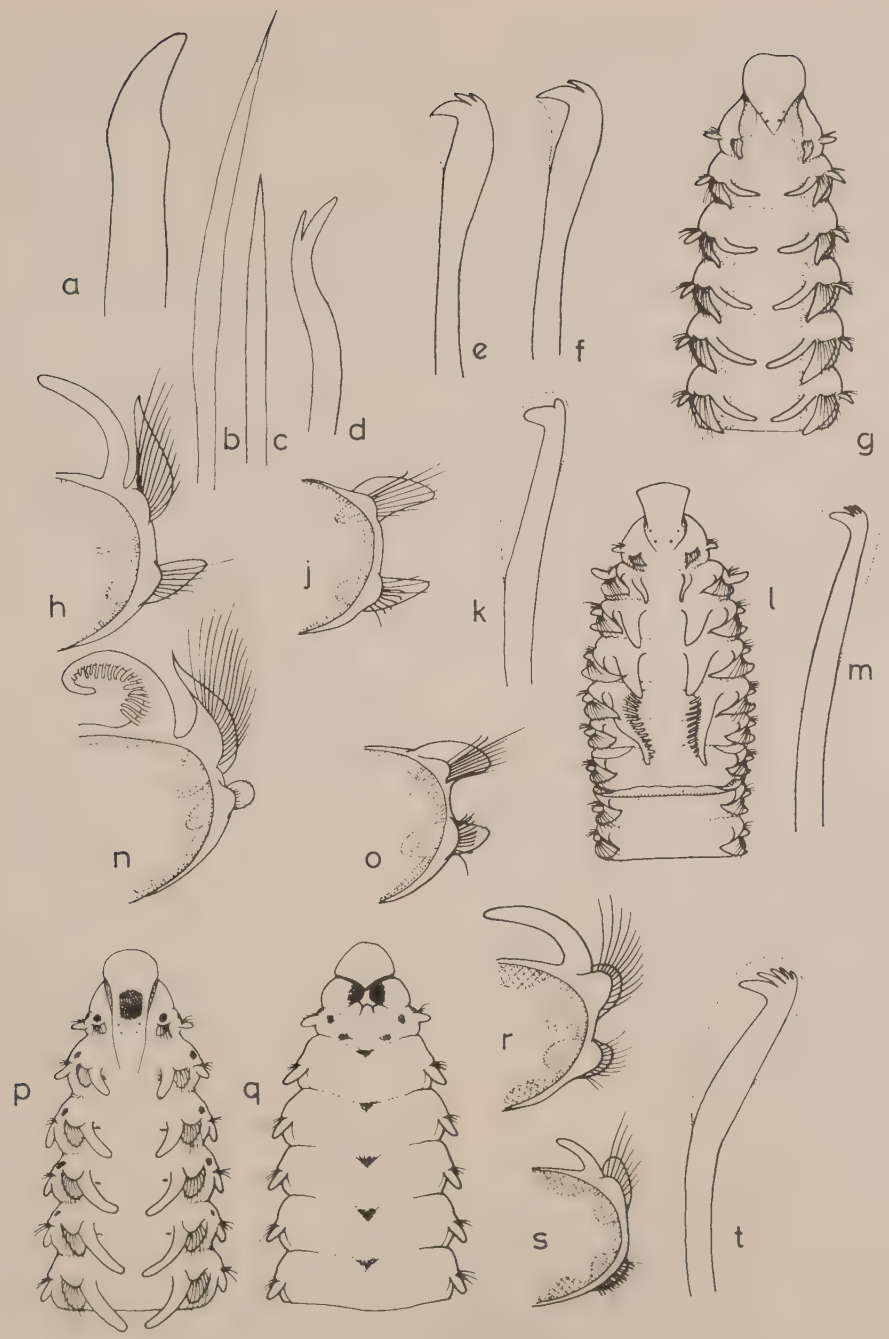

Figure 10.—*Polydora caeca* a, enlarged hook of setiger 5; b, winged capillary seta; c, posterior notopodial spine; d, hooded hook. *Spiophanes wigleyi* e, tridentate hooded hook from setiger 16; f, bidentate hooded hook from a posterior foot. *Prionospio cirrobranchiata* g, anterior end; h, 8th foot; j, 40th foot; k, hooded hook. *Prionospio dayi* l, anterior end; m, hooded hook; n, 5th foot with 4th gill; o, posterior foot. *Microspio pigmentata* p, dorsal view of anterior end; q, ventral view of anterior end; r, anterior view of 8th foot; s, anterior view of posterior foot; t, hooded hook.

were more strongly pigmented and the hooded hooks appeared effectively bidentate with only the faintest sign of a third tooth. When fresh, the pigmentation was striking and characteristic. Most of the head was brown, there were always a pair of spots on either side of the midventral line of anterior segments and often flecks on the tentacles, the dorsum and the parapodia.

Records.—Common off Beaufort in 3-120 m (21, *).

Distribution.—Gulf of Mexico; intertidal.

Spio setosa Verrill, 1873

Spio setosa. - Hartman, 1942a: 63, Fig. 119, 120; 1945: 31, pl. 6: Fig. 1, 2.

Records.—Cape Hatteras area and Beaufort Sound, intertidal (11, 18).

Distribution.—Massachusetts to North Carolina on intertidal sandbanks.

Streblospio benedicti Webster, 1879

Streblospio benedicti. - Webster, 1886: 149, pl. 8: Fig. 48-50. - Hartman, 1945: 34, pl. 6: Fig. 4; 1969: 189, Fig. 1, 2. - Foster, 1971: 112, Fig. 276-283.

Records.—Cape Hatteras area and Beaufort, intertidal and shallow dredgings in the sound (11, 15, 18).

Distribution.—Maine to Florida and the Gulf of Mexico; Denmark and France; Washington to California; estuarine and intertidal to 10 m in sandy mud.

Paraprionospio pinnata (Ehlers, 1901)

Prionospio pinnata Ehlers, 1901: 163. - Hartman, 1960: 114, pl. 9: Fig. 1-3; 1969: 161, Fig. 1-4. - Day, 1967, 488, Fig. 18.8. i-l.

Prionospio tenuis. - Hartman, 1945: 32 (*non* Verrill).

Paraprionspio pinnata. - Foster, 1969: 389, Fig. 12-21 (with synonymy); 1971: 102, Fig. 237-246.

Remarks.—Dr. Foster has resurrected Caullery's genus *Paraprionospio* in spite of the doubts expressed by Söderström (1920). The possession of a well-developed first setiger, three pairs of pinnate gills from the first foot and the large winglike expansions of the peristome which enfold the pointed prostomium are all distinctive. Dr. Foster has shown that eight taxa are synonyms of *P. pinnata.*

Records.—Common off Beaufort in 1-200 m (21, *).

Distribution.—Cosmopolitan in temperate and tropical seas from 1 to 500 m.

Scolelepis squamata (Müller, 1806)

Nerine cirratulus. - Fauvel, 1927: 36, Fig. 11 g-n. - Hartman, 1969: 115, Fig. 1-5.

Nerine agilis. - Hartman, 1945: 31.

Scolelepis (Scolelepis) squamata. - Pettibone, 1963b: 90 (synonymy). - Foster, 1971: 59, Fig. 118-131.

Scolelepis squamata. - Day, 1967: 483, Fig. 18.7. c-h.

Records.—Cape Hatteras to South Carolina, common on wave-washed sandy shores (3, 5, 11, 13, 18, 21, *).

Distribution.—Cosmopolitan in temperate and tropical seas; intertidal in sand.

Aonides sp.

Remarks.—Two small specimens were obtained which were identified by me as juveniles of *Aonides oxycephala* (Sars). The specimens were sent to the U.S. National Museum with the rest of the collection. Dr. Pettibone has recently informed me that the larger specimen has now been identified by Dr. Nancy Foster as *Aonides mayaguezensis* Foster (1969: 393, Fig. 22, 33; 1971: 66, Fig. 43-154) originally described from Puerto Rico in 3 m. *A. mayaguezensis* is a small species only 6.6 mm long with fewer branchiae than *A. oxycephala* (15-16 pairs instead of 20-30) and neuropodial hooks from setiger 19-23 instead of setiger 32-35. Possibly these are juvenile characters.

Records.—Off Beaufort in 20 m (*).

Prionospio (Minuspio) cirrifera Wiren, 1883

Prionospio cirrifera. - Fauvel, 1927: 62, Fig. 21

k-n. - Hartman, 1965a: 150; 1969: 155, Fig. 1, 2. - Day, 1967: 486, Fig. 18.8. a-d.
Prionospio delta Hartman, 1965a: 46.
Minuspio cirrifera. - Foster, 1971: 108, Fig. 262-275.

Remarks.—Foster (1971) has erected a new genus *Minuspio*, with *Prionospio cirrifera* as the type species, which very conveniently includes all species with four or more pairs of gills none of which are pinnate. While I do not feel that this grouping is worthy of generic status it is most useful as a subgenus.

Records.—Off Beaufort in 10 m (22, *).

Distribution.—Arctic; Atlantic from Sweden to South Africa and Greenland to South America; Bering Sea to southern California; 10-2,500 m.

Prionospio (Minuspio) cirrobranchiata Day, 1961

Figure 10g-k

Prionospio ? cirrifera. - Hartman, 1951: 84 (*non* Wiren).
Prionospio cirrobranchiata Day, 1961: 488, Fig. 4 a-d; 1967: 488, Fig. 18.8. e-h.

Description.—Body up to 20 mm long. Prostomium (Figure 10g) flattened, spade-shaped, and square in front with four eyes. About 10-12 pairs of smooth cirriform gills starting on setiger 2; all gills about twice length of notopodial lamellae. Anterior notopodial lamellae (Figure 10h) tapered and pointed; subsequent ones (Figure 10h) shorter and directed laterally. Neuropodial lamellae longer than broad even on posterior feet. No lateral pouches between neuropodia. Hooded hooks in neuropodia from setiger 17-19, numbering 4-5 per foot. Individual hooks (Figure 10k) with a single tooth above main fang.

Remarks.—Hartman (1951) gives a similar description of *Prionospio ? cirrifera* from Florida but does not mention the structure of the hooks. Laubier (1962) also describes a form from Venice under the name of *P. cirrifera* with 10-11 pairs of smooth cirriform branchiae but again he does not describe the structure of the hooks. *P. cirrifera* Wiren has five or six pairs of smooth branchiae, genital pouches between the neuropodia and hooks with four pairs of teeth above the main fang.

Records.—Off Beaufort in 80-200 m (21, *).

Distribution.—North Carolina to the Gulf of Mexico; South Africa; intertidal to 300 m.

Prionospio heterobranchia Moore, 1907

Prionospio heterobranchia Moore, 1907: 195, pl. 15: Fig. 1-6. - Foster, 1971: 90, Fig. 199-212.
Prionospio heterobranchia texana. - Hartman, 1951: 85.

Records.—Cape Hatteras area, intertidal (18).

Distribution.—Massachusetts to the West Indies and the Gulf of Mexico; intertidal to 10 m.

Prionospio dayi (Foster, 1969)

Figure 10l-o

Apoprionospio dayi Foster, 1969: 383, Fig. 1-11; 1971: 97, Fig. 226-236.

Description.—Body up to 30 mm long. Prostomium (Figure 10l) square in front with four eyes. Setiger 1 reduced and fused to peristome. Four pairs of branchiae on setigers 2 to 5; first pair small, smooth and cirriform; second and third pairs broad, smooth and compressed; fourth pair (Figure 10n) largest with a double series of papillae on inner margin. Notopodial lamellae pointed and medial to notosetae; fourth lamella largest, subsequent ones low and oval. A membranous crest across setiger 7. Neuropodial lamellae prominent and rounded, that of setiger 2 particularly enlarged. Posterior feet (Figure 10o) with similar postsetal lamellae in both rami. No genital pockets between neuropodia. Hooded hooks in neuropodia from setiger 16-18 with 8-10 per foot. Notopodial hooded hooks from about setiger 40. Individual hooks (Figure 10m) with three pairs of denticles above main fang. Pygidium with three anal cirri, median one long and lateral ones short.

Remarks.—Foster (1969: 388) has discussed the affinities of this species and has given a key which neatly separates *P. dayi* from *P. pygmaea* Hartman, *P. saldanha* Day, and *P. caspersi* Laubier.

P. dayi and *P. pygmaea* both have multidentate hooded hooks while *P. saldanha* and *P. caspersi* have a single tooth above the main

fang. Further *P. dayi* has a membranous crest across setiger 7 while *P. pygmaea* has not.

In a partial revision of the genus *Prionospio* to which numerous taxa have been assigned, Dr. Foster has erected a new genus *Apoprionospio* to include those species with four pairs of gills starting on setiger 2 and with only the fourth pair pinnate. While it would be most helpful to divide the large genus *Prionospio*, I believe that such a narrow division as that suggested would demand the erection of too many genera or subgenera. *P. ehlersi* Fauvel has four pairs of gills with only the first pair pinnate; *P. steenstrupi* Malmgren (the type species of the genus *Prionospio*), *P. fallax* Söderström, and *P. bocki* Söderström have four pairs of gills of which the first and the fourth are pinnate; *P. plumosa* Sars has four pairs with all except the third pair pinnate. *P. dayi* and the three species allied to it have four pairs with only the fourth pinnate; *P. heterobranchia* Moore has five pairs with the first, fourth, and fifth pinnate. Beyond this there are many species with more pairs of gills. If a subgenus were proposed which included the type species *P. steenstrupi* and all others with four pairs of gills starting on setiger 2 and one or more of the gills pinnate it would include many closely related species but it is felt that the genus *Apoprionospio* as presently defined creates too many difficulties.

Records.—Common off Beaufort in 3-200 m (21, 22, *).

Distribution.—North Carolina and the Gulf of Mexico; intertidal to 200 m.

Prionospio fallax Söderström, 1920

(?) Prionospio malmgreni Claparède, 1869: 73, pl. 22: Fig. 3.

Prionospio fallax Söderström, 1920: 235, Fig. 135, 144, 145.

Prionospio malmgreni. - Fauvel, 1927: 61, Fig. 21 a-e. - Day, 1963a: 418; 1967: 492, Fig. 18.9. a-c. - Hartman, 1969: 159, Fig. 1-4. - Day, Field, and Montgomery, 1971: 122.

Remarks.—Foster (1971: 82) has drawn attention to the fact that Claparède's original description of *P. malmgreni* is so vague and contradictory that it is impossible to be certain of the gill arrangement. Thus the species is indeterminate. Nonetheless, the description of *P. malmgreni* given by Fauvel (1927) and later workers agrees perfectly with the original description of *P. fallax* Söderström. Söderström also suggested that the two species are identical.

Records.—Off Beaufort in 10-200 m (21, *).

Distribution.—Atlantic from Sweden to Madeira; Mediterranean; South Africa; southern California; 10-200 m.

Prionospio cristata Foster, 1971

Prionospio cristata Foster, 1971: 87, Fig. 186-199.

Records.—Beaufort in sand at 0.5-32 m (22).

Distribution.—North Carolina, Gulf of Mexico, and the West Indies; 0.5-32 m.

Prionospio steenstrupi Malmgren, 1867

Prionospio steenstrupi. - Fauvel, 1927: 60, Fig. 21 f-i. - Hartman, 1965a: 152; 1969: 165, Fig. 1, 2. - Day, 1967: 489, Fig. 18.9. o-r. - Foster, 1971: 84, Fig. 175-185.

Records.—Common off Beaufort in 160-200 m (21, 22, *).

Distribution.—North Atlantic from Norway to Greenland and New Brunswick to Florida; Alaska to southern California; Japan; South Africa; intertidal to 1,745 m.

Microspio pigmentata (Reish, 1959)

Figure 10p-t

Spiophanes pigmentata Reish, 1959: 11, pl. 6: Fig. 1-4.

Nerinides pigmentata. - Hartman, 1961: 92.

Spio (Microspio) pigmentata. - Foster, 1971: 35 (list only).

Description.—Body about 10 mm long. Pigmentation characteristic, including a square brown patch on prostomium, lateral and ventral marks on peristome, and midventral spots and fainter marks on parapodia of anterior segments (Figure 10p, q). Prostomium rounded anteriorly and extending back as a low ridge to setiger 2. Four eyes but no occipital tentacle. Setiger 1 small, partly fused to peristome, without branchiae but with distinct parapodial lobes

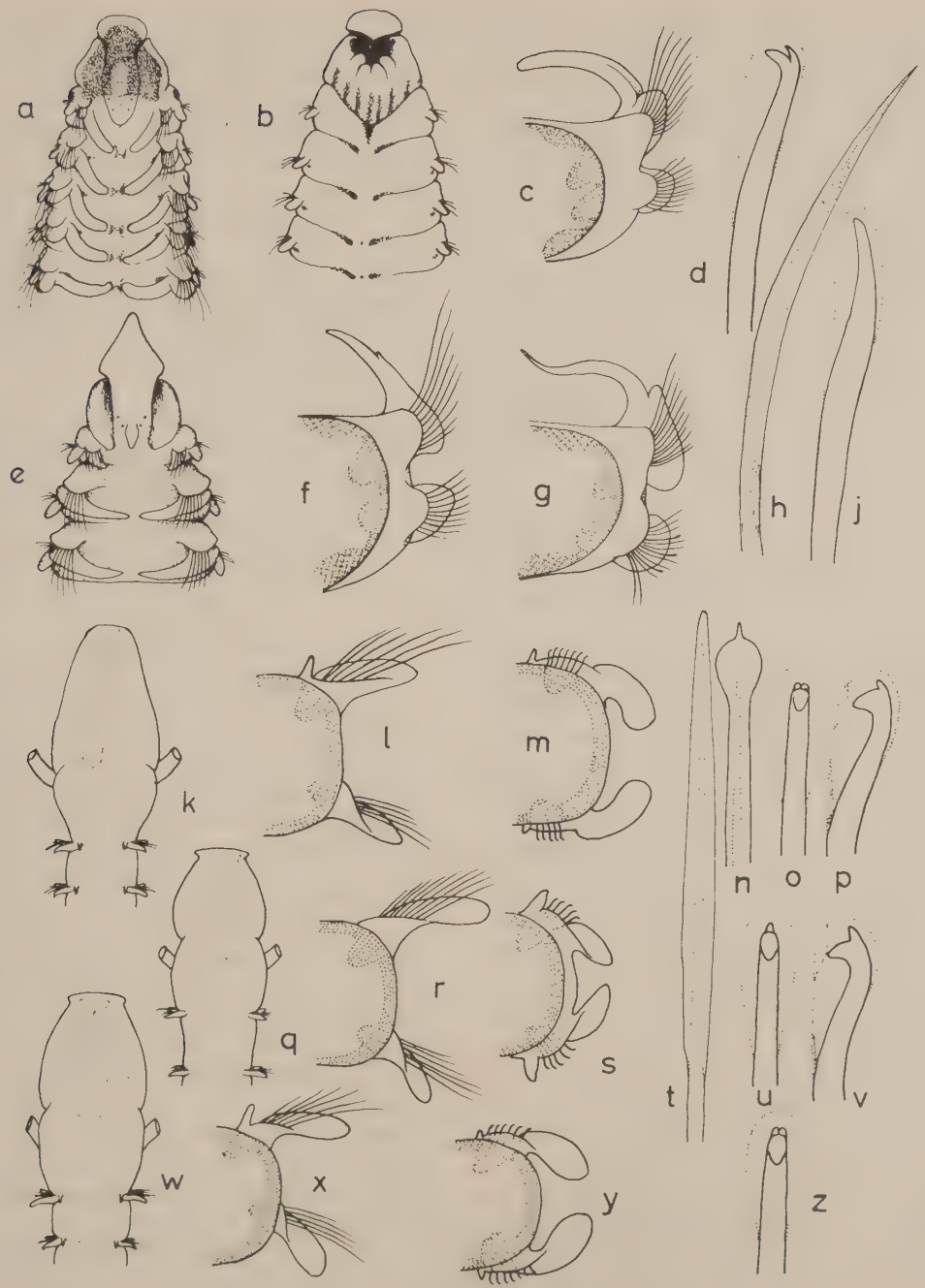

Figure 11.—*Spio pettiboneae* a and b, dorsal and ventral views of anterior end; c, anterior view of anterior foot; d, hooded hook. *Nerinides unidentata* n. sp. e, anterior end; f, anterior view of 6th foot; g, anterior view of 18th foot; h, inferior sabre seta; j, hooded hook. *Magelona papillicornis* k, head; l, anterior view of 6th foot; m, anterior view of abdominal foot; n, special seta from setiger 9; o and p, face view and profile of abdominal hook. *Magelona physillae* q, head; r, anterior view of 6th foot; s, anterior view of abdominal foot; t, setae from setiger 9; u and v, face view and profile of abdominal hook. *Magelona* sp. w, head; x, anterior view of 5th foot; y, anterior view of abdominal foot; z, face view of abdominal hook.

bearing both notosetae and neurosetae. Branchiae from setiger 2 to posterior segments, each gill straplike and separate from notopodial lobes. Notopodia of anterior feet (Figure 10r) with distinct presetal lamellae, and larger rounded postsetal lamellae; neuropodia similar but smaller. All lamellae of posterior feet (Figure 10s) smaller, the postsetal lamellae of neuropodia being mere ridges. No sign of genital pockets between neuropodia of middle segments. Pygidium with four anal cirri. Notosetae as narrow-bladed capillaries throughout, there being no notopodial hooks. Neurosetae as capillaries in anterior feet but capillaries mainly replaced by 8-12 hooded hooks from 12th foot. Individual hooks (Figure 10t) with a series of four denticles above main fang.

Remarks.—The genus *Microspio* Mesnil with its type species *Spio mecznikowianus* Claparède, has had a checkered history and even now its status is controversial. Discussions will be found in Söderström (1920), Fauvel (1927), Holmquist (1967), and Foster (1971). *Microspio* has branchiae from setiger 2, while *Spio* has branchiae from setiger 1. According to Söderström, *Microspio* may also be distinguished from *Spio* by the possession of only two dorsal ciliated organs per segment instead of four, but this distinction demands staining and sectioning. Unfortunately Söderström confused these clear distinctions by including other species in the genus *Microspio* which have gills from setiger 1. Holmquist has shown that these should be transferred to other genera. Foster gives a useful list of the species which may be included in *Microspio* which she regards as a subgenus of *Spio*. Hartman (1959a) listed *Microspio* as a synonym of *Paraspio* Czerniavsky but the original diagnosis states that *Paraspio* has branchiae on all setigerous segments and, as Holmquist states, it is a synonym of *Spio*.

Spiophanes pigmentata Reish was transferred to the genus *Nerinides* by Hartman (1961) but the latter genus has the anterior branchiae fused to the notopodial lamellae and the prostomium has a well-developed occipital tentacle. Hartman (1969: 91) also described another species, *Nerinides maculata* from southern California, which Foster (1971) refers to as *Spio (Microspio) maculata*. It is closely allied to *Spiophanes pigmentata* but it lacks the brown patch on the prostomium, the hooks appear in the neuropodium of setiger 11 not 12, and they have two small teeth in tandem above the main fang instead of three to five.

Records.—Off Beaufort in 40-80 m (*).

Distribution.—Southern California "in shelf depths"

Laonice cirrata (Sars, 1851)

Laonice cirrata. - Fauvel, 1927: 38, Fig. 12 a-e. - Day, 1967: 480, Fig. 18.6. h-k. - Hartman, 1969: 107, Fig. 1-4. - Foster, 1971: 69, Fig. 155-160.

Records.—Off Beaufort in 80-120 m (*).

Distribution.—Cosmopolitan from the Arctic to the Antarctic from 30 m to abyssal depths.

Nerinides unidentata New Species

Figure 11e-j

Holotype.—USNM 43150.

Description.—Holotype incomplete with only 24 segments measuring 6 mm. No color markings. Prostomium (Figure 11e) sharply pointed anteriorly and produced as a blunt keel to setiger 1. Two pairs of eyes and a large, erect occipital tentacle. Setiger 1 well developed with both notosetae and neurosetae. Dorsum flattened and without membranous crests. Gills from setiger 2 to end of fragment (setiger 24). Anterior gills (Figure 11f) completely fused to notopodial lamellae, but 8th and succeeding feet with shorter postsetal lamellae and gills free and well tapered (Figure 11g). Neuropodial lamellae prominent, oval, never bilobed. No genital pockets. Notosetae as limbate capillaries, often with punctate shafts. Anterior neurosetae similar. Inferior sabre-setae with punctate blades (Figure 11h) from setiger 12. Hooded hooks from setiger 20, each with a blunt unidentate tip (Figure 11j).

Remarks.—This species agrees with *N. knightjonesi* de Silva from Ceylon in having unidentate hooded hooks but differs in the shape of the prostomium, in having the branchiae completely fused to the dorsal lamella on the first few feet and in having hooded hooks in the neuropodia of setiger 20, not setiger 43.

Records.—One specimen off Beaufort in 10 m (*).

FAMILY MAGELONIDAE

Key to species of Magelona

1	Setiger 9 with specialized setae having a subterminal expansion [Prostomium spatulate and smoothly curved anteriorly. Hooded hooks with a pair of denticles above main fang]	*M. papillicornis*
1′	Setiger 9 without specialized setae	2
2	Prostomium with anterolateral angles or "horns"	3
2′	Prostomium smoothly curved in front. [Hooded hooks with a pair of denticles above main fang. Parapodia of anterior region with a small lobe medial to notosetae]	*M. rosea*
3	Hooded hooks with a single denticle above main fang. Notopodia of anterior region without a small lobe medial to notosetae	*M. phyllisae*
3′	Hooded hooks with a pair of denticles above main fang. Notopodia of anterior region with a small lobe medial to notosetae	*M.* sp.

Magelona papillicornis Müller, 1858

Figure 11k-p

Magelona papillicornis. - Fauvel, 1927: 64, Fig. 22 a-h. - Day, 1967: 495, Fig. 19.1. a-d. - Jones, 1963: 23 (key only).

[?] *Magelona rosea*. - Wells and Gray, 1964: 73 (*non M. rosea* Moore, 1907).

[?] *Magelona* sp. - Jones, 1968: 272, Fig. 1-33.

Description.—Body white, seldom more than 50 mm long in North Carolina, up to 170 mm in Europe. Prostomium (Figure 11k) spatulate with anterior margin smoothly rounded. Palps with four rows of adhesive papillae. Body clearly divided; anterior region with nine setigers and posterior region with numerous setigers. Notopodia of setigers 1-8 (Figure 11l) with a small papilla medial to notosetae and a tongue-shaped postsetal lamella; neuropodia with a similar but smaller postsetal lamella. Setiger 9 without medial papillae but with small presetal as well as postsetal lamellae in both rami. Abdominal parapodia (Figure 11m) with medial papillae both dorsally and ventrally and equal, oval notopodial and neuropodial lamellae curving towards one another. Lateral membranous pockets between one parapodium and the next. Setigers 1-8 with long bilimbate capillaries; setiger 9 with fans of specialized setae bearing spatulate blades ending in mucronated tips (Figure 11n). Abdominal setae as short hooded hooks, bidentate in profile but actually with a pair of denticles above the main fang. (Figure 11o, p).

Remarks.—Dr. Jones informs me that *M. papillicornis* is probably the same as *Magelona* sp. Jones (1968) from Woods Hole; *M. riojai* Jones is very close but, according to Jones, there are differences in the shape of the prostomium and in the setae of the 9th foot.

Records.—Pamlico Sound, intertidal and abundant off Beaufort in 3-10 m (19, 21, *).

Distribution.—Atlantic from Scotland to South Africa and Brazil; ? Massachusetts; North Carolina; Mediterranean; Madagascar; intertidal to 100 m.

Magelona phyllisae Jones, 1963

Figure 11q-v

Magelona phyllisae Jones, 1963: 2, Fig. 1-11.

Description.—Body colorless, up to 20 mm long. Prostomium (Figure 11q) flattened, not much broader than body and anterolateral angles or "horns" well marked. Palps long,

with four irregular rows of papillae. Parapodia of setigers 1-8 (Figure 11r) without papillae medial to notosetae but with elongated postsetal lamellae in notopodia and shorter but similar lamellae in neuropodia Setiger 9 with subequal lamellae, bearing bilimbate setae similar to those of setigers 1-8 (Figure 11t). Abdomen with postsetal lamellae of both rami rather small and expanded distally (Figure 11s). Relatively large papillae medial to hook-rows both dorsally and ventrally. Individual hooded hooks with only one large denticle above main fang (Figure 11u, v).

Remarks.—As noted by Jones (1963: 25) this species is close to *M. longicornis* Johnson. It may be distinguished by the absence of medial papillae above the thoracic notosetae and the possession of larger medial papillae on abdominal segments. Dr. Jones informs me that these specimens from Beaufort appear to be the same as specimens from Sapelo Island, Ga., and Port Aransas, Tex.

Records.—Off Beaufort in 10 m (*). This is a new record for the United States.

Distribution.—Peru in 181 m; ? Georgia and Texas.

Magelona sp.

Figure 11w-z

Material examined.—Three anterior fragments were collected of which the longest was 15 mm. They were obviously different from the other species recorded here and for this reason the characters are summarized below.

Description.—No color markings. Prostomium (Figure 11w) almost as broad as long with distinct anterolateral angles. Anterior parapodia (Figure 11x) with medial papillae above notosetae and postsetal lamellae of both rami flattened and ligulate. Setiger 9 with postsetal lamellae only, and with bilimbate capillaries similar to those of setigers 1-8. Abdominal parapodia (Figure 11y) with broad postsetal lamellae in both rami and papillae medial to rows of hooks both dorsally and ventrally. Individual hooks (Figure 11z) with two denticles side by side above main fang.

Remarks.—This species is allied to both *M. filiformis* Wilson and *M. cornuta* Wesenberg-Lund. A specimen of *M. filiformis*, which Dr. Wilson kindly sent to me, had much narrower parapodial lamellae on the thorax. Possibly these North Carolina specimens are closer to *M. cornuta* but more material is required to confirm the record.

Records.—Off Beaufort in 80-120 m (*).

Magelona rosea Moore, 1907

Magelona rosea Moore, 1907: 201, pl. 16: Fig. 24-30. - Jones, 1963: 23 (key only).

Records.—Off Beaufort in 80 m (*).

Distribution.—Massachusetts; intertidal.

FAMILY POECILOCHAETIDAE

Poecilochaetus sp.

Remarks.—Only two anterior fragments were obtained. They were obviously juveniles, the larger measuring 4 mm for 22 segments. Final identification is impossible, since the posterior segments with their specialized setae are missing. However, the other characters agree with *P. serpens*. The dorsum is smooth, not papillose, though one specimen has a chitinized projection on segment 9, rather like that described by Hartman (1939) for *P. johnsoni*. The nuchal organ has three free lobes with fuzzy edges, and it is difficult to be certain whether the ends are broken. The middle lobe reaches the posterior margin of setiger 2 and the lateral lobes are only slightly longer than broad. As usual in the genus there are curved spines in the neuropodia of setigers 2 and 3 and long, flask-shaped parapodial lobes with knobbed ends on setigers 7 to 13. Plumose setae appear among the capillaries on setiger 20. The smooth dorsum excludes *P. fulgoris* and the three-lobed nuchal organ suggests *P. serpens*.

Records.—Off Beaufort in 80 m (*).

FAMILY CHAETOPTERIDAE

Key to genera and species

1	Notopodia of middle region bilobed or trilobed. Tube often horny and ringed	2
1′	Notopodia of middle region never bilobed. Tube neither horny nor ringed	3
2	A pair of minute tentacular cirri as well as large grooved palps (*Phyllochaetopterus*). Middle region of 7 or more segments. Tube horny, often branching	*P. socialis*
2′	No tentacular cirri, only a pair of grooved palps. Tube horny, ringed, solitary (*Spiochaetopterus*). Middle region with about 20 segments. [Eyes present]	*S. costarum oculatus*
3	Middle region of five segments, the last three with notopodia fused to form large paddles. Palps much shorter than anterior region (*Chaetopterus*)	*C. variopedatus*
3′	Middle region of less than five segments, bearing separate, fingerlike notopodia, very like those of posterior region. Palps long (*Mesochaetopterus*). [Middle region of three long segments]	*M. taylori*

Phyllochaetopterus socialis Claparède, 1870

Phyllochaetopterus socialis. - Fauvel, 1927: 84, Fig. 30 a-1. - Day, 1967: 525, Fig. 22.1. h-r.

Records.—Off Beaufort in 20 m (*).

Distribution.—Cosmopolitan in temperate and tropical seas; intertidal to 100 m.

Spiochaetopterus costarum oculatus Webster, 1879

Spiochaetopterus oculatus Webster, 1879: 47, pl. 8: Fig. 98-102. - Hartman, 1945: 35. - Barnes, 1964: 397, Fig. 1-4.

Spiochaetopterus costarum oculatus. - Gitay, 1969: 15.

Description.—Body slender, up to 60 mm long; dark ventral patch from setiger 6 to 7, white patch from setiger 7 to 9. Prostomium oval, eyes dark, conspicuous. Buccal segment large, fleshy, collarlike; palps long, colorless. No tentacular cirri. Anterior region of nine uniramous flattened setigers. A single stout brown cutting seta in fourth foot. Middle region of about 20 segments each with simple club-shaped notopodia. Tube long, slender, translucent, annulated. Animal solitary, living in sandy mud.

Remarks.—All the specimens dredged off Beaufort were juveniles, with very delicate transparent tubes which lacked annuli, so that it would appear that these develop with age, as the tube thickens. Juveniles as small as 5 mm already had the characteristic dark patch on the ventrum of setiger 6. All specimens except one had conspicuous eyes. The smallest specimens only had three or four segments in the middle region, but the number increases rapidly with the length of the worm.

According to Barnes, the main difference between *S. costarum costarum* and *S. costarum oculatus* is that *S. costarum costarum* uses only one mucus bag to collect food particles, while *S. costarum oculatus* uses eight or more.

Records.—Cape Hatteras area to Beaufort on sheltered banks and below low tide (3, 11, 13, 18, *).

Distribution.—Massachusetts to the Gulf of Mexico; intertidal and shallow dredgings.

Chaetopterus variopedatus (Renier, 1804)

Chaetopterus variopedatus. - Fauvel, 1927: 77, Fig. 26 a-n. - Day, 1967: 529, Fig. 22.2. a-g. - Hartman, 1969: 209, Fig. 1-3.

Records.—Cape Hatteras to Beaufort, intertidal to 30 m (4, 5, 7, 8, 9, 11, 13, 18).

Distribution.—Cosmopolitan in temperate and tropical seas; intertidal to 100 m.

Mesochaetopterus taylori Potts, 1914

Mesochaetopterus taylori Potts, 1914: 958, pl. 1: Fig. 1-3, pl. 3: Fig. 5, 6, 9, text Fig. 1-5. - Hartman, 1969: 213, Fig. 1-4.

Description.—Body up to 100 mm long. Prostomium small, oval, without eyes in adult. Buccal segment large, swollen, and collarlike with a pair of long grooved palps. No tentacular cirrus. Anterior region of nine uniramous segments. Several stout brown cutting setae in fourth foot. Middle region of three long segments with simple notopodial lobes. Cup-shaped organs on second and third segment of mid-region. Posterior region not clearly distinguished from middle region; notopodia similar, but segments progressively shorter and notopodia more conical. Tube fragile and usually covered with sand.

Records.—Cape Hatteras area and Beaufort on intertidal mudbanks (18, *).

Distribution.—Western Canada to northern California and North Carolina; intertidal.

FAMILY CIRRATULIDAE

Key to genera and species

1	Several grooved tentacular filaments (or scars showing their origin) above first few setigers	2
1′	One pair of grooved tentacular filaments or palps at junction of setiger 1 and last annulus of peristome	4
2	Tentacular filaments and gills arise on same segment (*Cirratulus*)	No N.C. record
2′	Tentacular filaments arise posterior to first gill filament which appears on setiger 1. [Sigmoid acicular hooks present (*Cirriformia*)]	3
3	Tentacular filaments in a row between setigers 1 and 2. Gill filaments of middle segments arise immediately above notosetae	*C. grandis*
3′	Tentacular filaments arise above setiger 4. Gill filaments of middle segments arise farther above notosetae than distance between notosetae and neurosetae.	*C. filigera*
4	Never more than 10 pairs of gill filaments. Acicular setae with spoon-shaped ends. (*Dodecaceria*). [Body dark; 9-10 pairs of gills]	*D. corallii*
4′	Many pairs of gills. Acicular setae when present, lack spoon-shaped ends	5
5	No acicular setae even in posterior segments, only tapered capillaries (*Tharyx*)	6
5′	Acicular setae present as well as capillaries, though former sometimes restricted to posterior segments	8

6	Capillary setae of long posterior segments are short with saw-edged blades	*T. annulosus*
6′	Capillary setae with smooth or finely spinulose blades throughout	7
7	Prostomium with eyespots. Only a few capillary setae per parapodium	*T. setigera*
7′	Prostomium without eyespots in adult. Numerous capillary setae [possibly adult of *T. setigera*]	*T. marioni*
8	Acicular setae of terminal segments very prominent and numerous, almost encircling body (*Chaetozone*)	9
8′	Acicular setae of terminal segments not obviously different from preceding ones (*Caulleriella*). [Acicular setae short, with faintly bidentate ends without hoods]	*C. killariensis*
9	Acicular spines present in neuropodia from first setiger onwards	*Ch. gayheadia*
9′	Acicular spines appear in neuropodia of middle segments	*Ch. setosa*

Cirriformia grandis (Verrill, 1873) new combination

Cirratulus grandis Verrill, 1873a: 606, pl. 15: Fig. 80, 81. - Hartman, 1942b: 126.

Description.—Body yellowish green, up to 150 mm long. Segments short, rounded dorsally, and flattened ventrally. Prostomium bluntly conical, without eyes but with diffuse dark pigment. Peristome fused to prostomium, rather long and irregularly wrinkled but not segmented. A transverse row of about 20 grooved tentacular filaments above junction of setiger 1 to 2. A median gap in tentacular row separating right and left groups. Cylindrical (not grooved) gill filaments from setiger 1 (thus anterior to tentacular filaments) to posterior part of body. Gill filaments, even of middle segments, arise immediately above notosetae. Capillary setae in both rami of all segments. Yellow acicular spines quite distinct in both rami of posterior segments but longer and more like capillaries in anterior feet; spines distinct in juveniles from notopodium of setiger 35 and neuropodium of setiger 19 but not distinct in adults in anterior third of body.

Remarks.—Verrill's description is not clear regarding the origin of the first gill filaments and the tentacular filaments. As noted by Day (1967: 500) the tentacular filaments arise from the posterior dorsal margin of the peristome. In *Cirriformia* this peristomial projection extends further back than the first setiger which bears the first pair of gill filaments; in *Cirratulus* the first pair of gill filaments arises at the same level as the tentacular filaments. In *Cirriformia grandis* the tentacular filaments arise just posterior to the gill filaments on setiger 1 so that this species is a link between the two genera. In *Cirratulus cirratus* (Müller) the tentacular filaments arise above the gill filaments on setiger 1. Thus *Cirriformia grandis* and *Cirratulus cirratus* are very alike in this respect, but *C. cirratus* can easily be distinguished by the fact that in the middle of the body the gill filaments arise at least as far above the notosetae as the distance between the notosetae and neurosetae.

Records.—Off Beaufort in 10-80 m (3, *).

Distribution.—Massachusetts to North Carolina; intertidal to 80 m.

Cirriformia filigera (Delle Chiaje, 1828)

Audouinia filigera. - Fauvel, 1927: 92, Fig. 32 h-m.

Cirriformia filigera. - Hartman, 1951: 94. - Day, 1967: 518, Fig. 20.4. p-q.

Records.—Cape Hatteras to Beaufort, intertidal to 50 m (11, 13, 18, 19, 20).

Distribution.—Cosmopolitan in warm and tropical seas; intertidal to 50 m.

Dodecaceria corallii (Leidy, 1855)

Figure 12a, b

Naraganseta corallii Leidy, 1855: 494. - Miner, 1950: 344.

Dodecaceria near *concharum*. - Hartman, 1951: 94.

Description.—Body dark green to black, 8-12 mm long, rounded anteriorly, rather flattened posteriorly. Burrows common in encrusting corallines or corals, e.g., *Astrangia danae*. Prostomium (Figure 12a) as an oval hood overhanging mouth; eyes indistinguishable. Peristome long, annulated, fused to prostomium anteriorly, and bearing a pair of cylindrical gills and a pair of grooved palps posteriorly at junction with setiger 1. Similar gill filaments of decreasing length present above notosetae of setigers 1-6 or 1-9; thus 7-10 pairs in all. Segments short and without parapodial prominences, the setae arising directly from body wall. Anterior segments bearing only limbate capillaries with minutely serrated margins. First hooks in neuropodium of setiger 8-12 and in notopodium of setiger 10-13; middle segments with hooks but few capillaries; posterior segments with hooks and more capillaries. Individual hooks (Figure 12b) with slightly sigmoid shafts and excavated ends preceded by a boss thus resembling spoons with a lump before the bowl.

Remarks.—*D. corallii* differs from *D. concharum* Oersted in having more pairs of gills and more pointed bowls to the spoon-shaped hooks.

Records.—Common in corals in 6.5-20 m off Beaufort (20, *).

Distribution.—Massachusetts to the Gulf of Mexico in 0-20 m.

Tharyx annulosus Hartman, 1965

Tharyx annulosus Hartman, 1965a: 167, pl. 34: Fig. a-e.

[?] *Caulleriella annulosa*. - Banse and Hobson, 1968: 31, Fig. 7 a.

Remarks.—The specimens from North Carolina agree very well with Dr. Hartman's description. The acicular spines reported by Banse and Hobson (1968) were not seen and possibly belong to a different species with many similar characters.

Records.—Off Beaufort in 80-200 m (21, *).

Distribution.—New England to tropical South America; South Africa; 80-4,540 m.

Tharyx setigera Hartman, 1945

Tharyx setigera Hartman, 1945: 35, pl. 7: Fig. 1-3.

Note.—*T. setigera* differs from *T. marioni* in possessing eyespots and in having fewer setae; these may be juvenile characters.

Records.—Cape Hatteras area to Beaufort, intertidal (11, 15, 18).

Distribution.—North Carolina; intertidal.

Tharyx marioni (Saint-Joseph, 1894)

Tharyx marioni. - Fauvel, 1927: 100, Fig. 35 a-b. - Hartman, 1965a: 169. - Day, 1967: 505, Fig. 20.2. a-c.

Remarks.—Anterior fragments of *T. marioni* are difficult to distinguish from those of *Chaetozone setosa* since the acicular setae of the latter are not well differentiated from capillaries in anterior segments.

Records.—Off Beaufort in 18-80 m (20, *).

Distribution.—Temperate North and South Atlantic from the English Channel, eastern Canada to North Carolina, northern South America, South Africa; intertidal to 1,000 m.

Caulleriella killariensis (Southern, 1914)

Heterocirrus killariensis. - Fauvel, 1927: 97, Fig. 34 d-h.

Description.—Body threadlike, 8-12 mm long. Prostomium conical and acutely pointed but without eyes. Peristome faintly annulated, with a pair of long grooved palps at junction with setiger 1. Filiform branchiae from setiger 1 to near end of body; anterior branchial filaments long, arising immediately above notosetae; posterior filaments short, arising well above noto-

setae. Few setae per parapodium; four to six short capillaries per ramus up to setiger 7 and one or two fine capillaries plus one or two short acicular hooks per ramus in subsequent segments. Individual hooks minutely bidentate and without a hood or sheath.

Records.—One specimen from 10 m off Beaufort (*). This is a new record for the United States.

Distribution.—Ireland; in 10-20 m.

Chaetozone gayheadia Hartman, 1965

Chaetozone gayheadia Hartman, 1965a: 166.
Chaetozone setosa. - Day, 1967: 510, Fig. 20.1. l-p (*non* Malmgren).

Records.—Off Beaufort in 40-160 m (*).

Distribution.—New England to North Carolina in 40-300 m; South Africa (95 m).

Chaetozone setosa Malmgren, 1867

Chaetozone setosa. - Fauvel, 1927: 101, Fig. 35 d-k. - Hartman 1965a: 166; 1969: 241, Fig. 1-3.

Records.—Common off Beaufort in 40-200 m (21, *).

Distribution.—Arctic and in temperate waters of the North and South Atlantic; southern California; Mediterranean; probably cosmopolitan; from 40 to 4,436 m.

FAMILY ORBINIIDAE

Notes on the Genera of the Subfamily Orbiniinae

While the definitions of genera of the subfamily Orbiniinae published by different workers readily distinguish typical species, they are not in absolute agreement and "difficult" species may be referred to different genera or subgenera according to which authority is consulted. The orbiniids recorded from North Carolina include several of these difficult species, and it was thus necessary to consider the generic definitions very carefully before the collection could be identified. As the work proceeded it appeared worthwhile to redefine all genera of the subfamily Orbiniinae.

Useful discussions of the whole family Orbiniidae will be found in Eisig (1914), Fauvel (1927), Hartman (1957), Pettibone (1957), and Day (1967). Hartman (1957: 242) divided the family Orbiniidae into two subfamilies. The Protoariciinae includes genera with two achaetous segments behind the prostomium. We are not concerned with this subfamily here and for further details the reader is referred to Hartman's account. The subfamily Orbiniinae includes all the larger orbiniids with one achaetous (peristomial) segment behind the prostomium, an eversible epithelial proboscis, well-developed parapodia and branchiae on many segments. The Orbiniinae include the genera *Orbinia* Quatrefages, *Phylo* Kinberg, *Scoloplos (Scoloplos)* Blainville, *Scoloplos (Leodamas)* Kinberg, *Scolaricia* Eisig, *Haploscoloplos* Monro, *Califia* Hartman, and *Naineris* Blainville (with the subgenus *Polynaineris* Pettibone).

These genera are distinguished by different combinations of characters. Generic definitions will be given later, but meanwhile it may be noted that *Naineris* is easily separated by the possession of a bluntly rounded to square prostomium; all other genera have pointed conical prostomia.

Scoloplos occupies a central position in the subfamily. It agrees with *Haploscoloplos* and *Califia* in having none to two foot-papillae (= postsetal papillae, podial lobes or podial fringe) on the posterior thoracic neuropodia and none to two stomach-papillae (= subpodial papillae, ventral papillae or ventral fringe) below the neuropodia. In distinction to this, typical species of *Orbinia* and *Phylo* have five or more foot-papillae and numerous stomach-papillae. Inevitably, "difficult" species occur; *Orbinia johnsoni* (Moore) has only 1 foot-papilla but a maximum of 3 stomach-papillae; *Orbinia dubia* Day has a maximum of 3 foot-papillae and up to 12 stomach-papillae; *Phylo norvegicus* (Sars) and *Orbinia exarmata* (Fauvel), have more than 10 foot-papillae but no stomach-papillae; *Scoloplos (Scoloplos) riseri* Pettibone has a maximum of 3 foot-papillae and up to 9 stomach-papillae. It may be noted too, that it is sometimes

difficult to distinguish between the foot-papillae on the lower edge of the neuropodium and the stomach-papillae on the ventrum immediately below. For these reasons it is suggested that the distinction between *Orbinia* and *Phylo* on the one hand, and *Scoloplos, Haploscoloplos,* and *Califia* on the other, be based on the total number of papillae behind and below the posterior thoracic neurosetae. According to Eisig (1914), certain specimens of *Scoloplos armiger* which is the type species of *Scoloplos* have a maximum of two foot-papillae and a maximum of two stomach-papillae giving a total of four papillae of both types. On this basis all species with a total of five or more foot-papillae plus stomach-papillae would be included in *Orbinia* or *Phylo* and those with four or less would be referred to *Scoloplos, Haploscoloplos,* or *Califia.*

Orbinia, the type genus of the family is closely related to *Phylo.* The latter is regarded as a valid genus by Hartman (1957) and Day (1967) but as a subgenus of *Orbinia* by Pettibone (1957, 1963). *Phylo* is distinguished from *Orbinia* by the possession of heavy spines or "spear-headed spines" in the posterior neuropodia. These form the anterior row of neuropodial setae but the inferior ones are not very distinct and only the superior ones of adult specimens are greatly elongated so that they project well above the dorsum. In *P. ornatus* (Verrill) the spines are less distinct than usual so that Pettibone (1963a) has referred it to *Orbinia.* In most species, however, the spines with their spear-shaped or arrowshaped ends are very distinctive and *Phylo* is accepted here as a valid genus.

As mentioned earlier, the remaining genera with four or fewer foot-papillae or stomach-papillae are all related to *Scoloplos.* They are distinguished from one another by the segmental position of the first pair of branchiae, the structure of the neuropodium in both the thorax and abdomen and the nature of the neuropodial setae.

Scoloplos has been accepted as a valid genus by all modern workers. It is commonly divided into two subgenera—*Scoloplos (Scoloplos)* with the type species *Scoloplos armiger* (Müller) and *Scoloplos (Leodamas)* with the type species *Leodamas verax* Kinberg. Pettibone (1957), in her diagnosis of the two subgenera, stresses the fact that in *Leodamus* (sic), the thoracic neuropodial lobes are low, rounded, and without papillae while in *Scoloplos sensu strictu,* the thoracic neuropodial lobes are provided "with papilla in middle of lobe, with or without 1 or 2 additional papillae on lower part." Hartman (1957), in her diagnosis of the two subgenera, stresses the presence of two or more acicula in the abdominal neuropodia and branchiae starting on setiger 10 or not until setiger 26 in *Scoloplos sensu strictu* and a single heavy aciculum in abdominal neuropodia and branchiae from setiger 5 or 6 in *Scoloplos (Leodamas).* Afrer consulting the descriptions of many species of *Scoloplos,* it would appear that the most useful criterion for the distinction of the two subgenera is the appearance of the first pair of branchiae on setiger 5-6 in *Scoloplos (Leodamas)* and the appearance of branchiae on setiger 8-10 or some subsequent segment in *Scoloplos (Scoloplos).* The number of acicula in the abdominal neuropodia does not appear to be constant and is not stated in the descriptions of many species.

Scolaricia has been accepted as a valid genus although few species have been assigned to it. Since different workers have used different combinations of characters to distinguish *Scolaricia* from *Scoloplos,* Eisig's original description of the type species *Scolaricia typica* was consulted and an attempt was made to examine the type specimen from Italy. This could not be traced in the Paris museum but eventually three specimens from Marseilles, identified by Dr. G. Bellan, were obtained with the help of Dr. H. Zibrowius. The following diagnosis was extracted from Eisig's original account and amplified from the Marseilles specimens.

Scolaricia typica Eisig, 1914 from Marseilles.

Description.—Length up to 150 mm for 250 segments. Prostomium pointed. Thorax flattened with 18-21 setigers. Transition to abdomen abrupt. Branchiae narrow and lanceolate, present from setiger 15 or 16. Postsetal lobe of notopodium short and tapered in thorax, becoming weakly scalpel-shaped and as long as branchiae in anterior abdomen. No interramal cirri. Thoracic neuropodia as vertical halfmoon-shaped ridges, with a median notch but without a foot-papilla in setigers 1-7, becoming oval with a more dorsal notch and a single foot-papilla on last three to six thoracic setigers. Stomach-papillae entirely absent. Abdominal

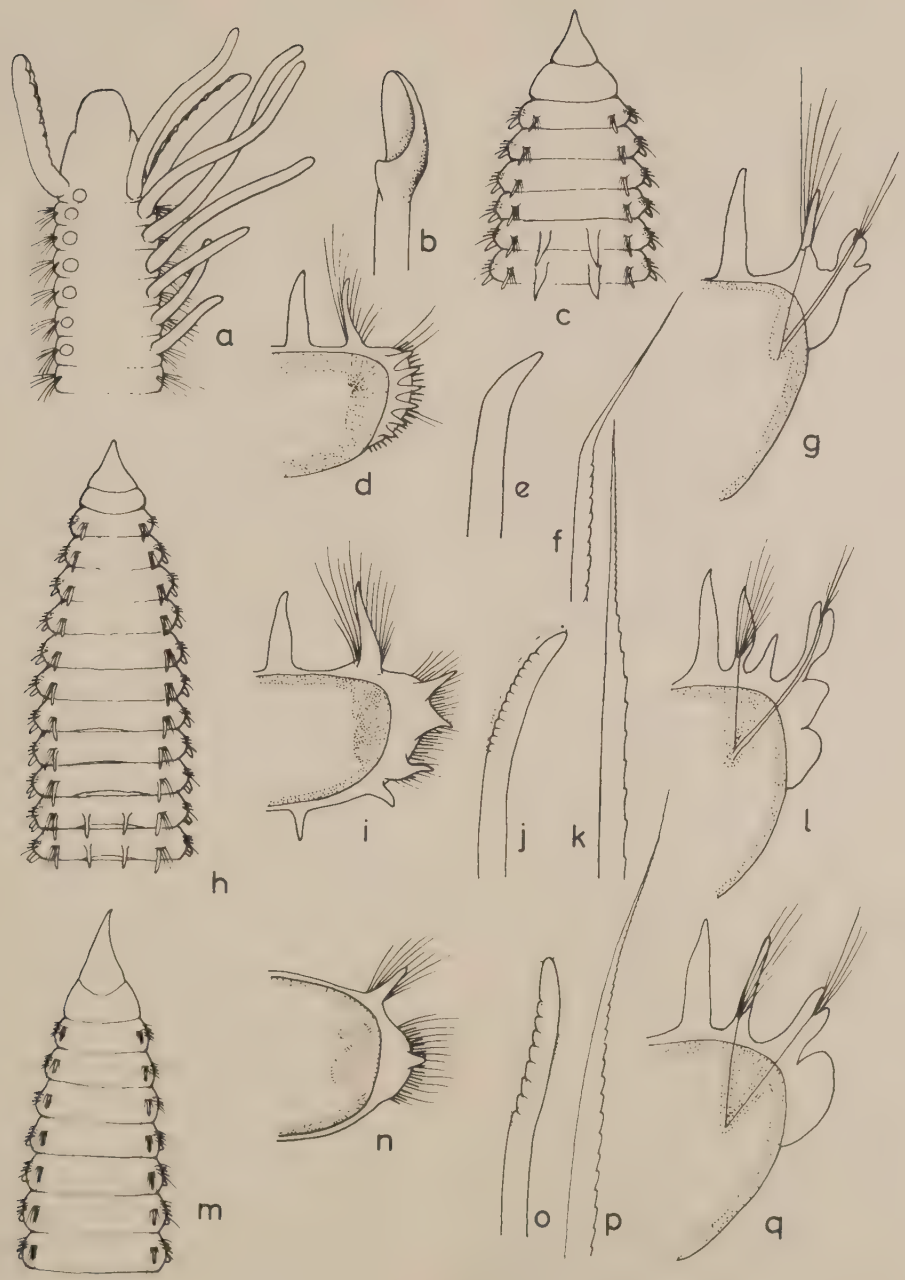

Figure 12.—*Dodecaceria corallii* a, anterior end; b, spoon-shaped hook. *Orbinia americana* n. sp. c, anterior end; d, posterior view of 10th foot; e, thoracic hook; f, flail-seta from abdominal neuropodium; g, 6th abdominal foot. *Orbinia riseri* h, anterior end; i, posterior view of 18th foot; j, thoracic hook; k, flail-seta from abdominal neuropodium; l, posterior abdominal foot. *Scoloplos capensis* m, anterior end; n, posterior view of 10th thoracic foot; o, thoracic hook; p, flail-seta from abdominal neuropodium; q, 5th abdominal foot.

neuropodia with a broad basal flange and a bilobed dorsal projection. Inner (dorsal) lobe longer and stouter than outer lobe. No ventral cirri.

Thoracic notosetae as numerous crenulate capillaries; abdominal notosetae similar but with a few short forked setae in addition. Thoracic neurosetae as four or five rows of completely smooth, slightly bent hooks with guards plus small tufts of crenulate capillaries at the median notch of the neuropodium and at the upper margin. Abdominal neurosetae include three or four acicula with projecting ends, two or three normally tapered crenulate capillaries and five or six flail-setae with stout, lightly serrated shafts and tapered tips sometimes bent at an angle.

Remarks.—In discussing the diagnostic characters of his new genus, Eisig (1914: 427) does not mention the flail-setae but stresses the notch in the thoracic neuropodia, the absence of stomach-papillae, the presence of only one foot-papilla on the last few thoracic segments and the lamellar expansion at the base of the abdominal neuropodia.

Fauvel (1927: 7) in his introduction to the family Ariciidae, states that flail-setae are peculiar to the genus *Scolaricia* and uses the notch in the thoracic neuropodia in his generic key. Hartman (1957: 295) uses the flail-setae to distinguish *Scolaricia* from *Scoloplos*. Pettibone (1957) does not mention *Scolaricia* since it was not represented in the collections of the U.S. National Museum. Day (1957: 547) distinguishes *Scolaricia* from *Scoloplos* by the possession of flail-setae, the notched thoracic neuropodia, and the lamellar base of the abdominal neuropodia. Unfortunately later studies have shown that none of these characters are peculiar to *Scolaricia*. The examination of *Scolaricia typica* showed that the notches in the thoracic neuropodia are neither obvious nor deep but are mere depressions on either side of the origin of the single foot-papilla. They may be seen in species of *Scoloplos*, as illustrated for *Scoloplos armiger*, the type species of *Scoloplos*, by Hartman (1957, pl. 29: Fig. 2.) Again the flail-setae are differentiated from normal crenulate capillaries to varying degrees and are present in *Scoloplos riseri* Pettibone, *Scoloplos acmeceps* Chamberlin, and even to some degree in *Scoloplos armiger*. The lamellar base to the abdominal neuropodia is also developed to varying degrees; to a slight extent in *Scoloplos armiger* and to a greater extent in *Haploscoloplos pugettensis* (Pettibone) and *Scoloplos acmeceps* as illustrated by Hartman (1957: pl. 26: Fig. 3, pl. 30: Fig. 2.) In *Orbinia dubia* Day, the lamellar lobe is very large and even notched in the posterior abdomen. As this species has a row of 20 + 20 stomach-papillae on the posterior thorax it obviously does not fit in the genus *Scolaricia*. In the face of all this evidence it will be obvious that *Scolaricia* must become a synonym of *Scoloplos*.

The genus *Haploscoloplos* was erected by Monro (1933a) with *Scoloplos cylindrifer* Ehlers as the type species. It is generally similar to *Scoloplos* but is distinguished by the absence of hooks in the thoracic neuropodia, the thoracic neurosetae being all crenulate capillaries. It may be noted, however, that the development of neuropodial hooks is very variable in *Scoloplos*, some species having very few hooks, and it is suspected that very juvenile specimens of *Scoloplos* lack hooks in most or all thoracic segments. *Haploscoloplos* is accepted as a valid genus by Hartman (1957) but is regarded as a synonym of *Scoloplos sensu strictu* by Pettibone (1957). She writes: "Until it can be established how much the abrasive action of certain substrata has to do with the formation of certain types of crotchets [here termed hooks] from capillaries, the character does not seem to be a good one." To me there seems no possibility that the normal hooks with rounded ends and guards could have been formed from broken or abraded crenulate capillaries. While I recognize that juvenile specimens of some species of *Scoloplos* may be wrongly assigned to *Haploscoloplos*, I agree with Hartman and Monro in recognizing it as a valid genus.

The genus *Califia* was erected by Hartman (1957), with *C. calida* Hartman as the type species. It differs from *Scoloplos* in having brush-tipped hooks, as well as crenulate capillaries in the anterior thoracic neuropodia. Pettibone (1957) described *Scoloplos (Scoloplos) schmitti* with similar characters but with normal hooks as well as brush-tipped ones. It is obvious that both should be included in *Califia* and the only question that remains is whether *Califia* should retain its generic rank or is better regarded as a subgenus of *Scoloplos*. Pettibone (1963a) regards it as a subgenus of *Scoloplos*. I agree

with Hartman in recognizing *Califia* as a valid genus.

Generic definitions

Having considered the main distinguishing features of the various genera and subgenera of the subfamily Orbiniinae, their diagnostic characters are set out below. It will be noted that certain characters are not mentioned since they are regarded as being of specific importance only. Among these are the notch in the neuropodial lobe of the thorax, the presence of a lamellar base or ventral cirri on the abdominal neuropodia, the presence or absence of flail-setae, and the number of acicula in abdominal neuropodia. Again, the presence of only one achaetous segment behind the prostomium is omitted for this applies to all genera of the Orbiniinae.

Naineris Blainville, 1828

Orbiniinae with prostomium rounded to square in front. First pair of branchiae starting on any thoracic setiger from 2 to 23. Thoracic neuropodia with none to two foot-papillae; no stomach-papillae. Thoracic neurosetae include crenulate capillaries, hooks and sometimes subuluncini (intermediate forms) as well.

Type species: Nais quadricuspida Fabricius, 1780.

Orbinia Quatrefages, 1865

Orbiniinae with prostomium pointed. First pair of branchiae on setiger 5-9. Posterior thoracic segments usually with several foot-papillae and numerous stomach-papillae but with at least five papillae of both types combined on some thoracic segment. Thoracic neurosetae include blunt hooks (exceptionally replaced by subuluncini in *O. exarmata*) and usually crenulate capillaries; heavy spear-tipped spines or brush-tipped setae absent.

Type species: Aricia sertulata Savigny, 1820 (includes *Aricia cuvieri* Audouin and Milne-Edwards, 1833).

Phylo Kinberg, 1866

Orbiniinae with prostomium pointed. First pair of branchiae on setiger 5-7. Resembles *Orbinia* in having posterior thoracic segments usually with several foot-papillae and numerous stomach-papillae but with at least five papillae of both types combined on some thoracic segment. Thoracic neurosetae include heavy spear-tipped spines as well as blunt hooks and crenulate capillaries.

Type species: Phylo felix Kinberg, 1866.

Scoloplos Blainville, 1828

Orbiniinae with prostomium pointed. First pair of branchiae on setiger 5 or some subsequent thoracic segment. Posterior thoracic segments with few or no foot-papillae and stomach-papillae and never more than four papillae of both types combined. Thoracic neurosetae include blunt hooks and usually crenulate capillaries; heavy spear-tipped spines and brush-tipped setae absent.

Type species: Lumbricus armiger Müller, 1776.

Subgenus *Scoloplos (Scoloplos).* - *Scoloplos* species with first pair of branchiae on setiger 8-10 or some subsequent thoracic segment.

Subgenus *Scoloplos (Leodamas).* - *Scoloplos* species with first pair of branchiae on setiger 5-6.

Type species: Leodamas verax Kinberg, 1886

Haploscoloplos Monro, 1833

Orbiniinae with prostomium pointed. First pair of branchiae on setiger 9 or subsequent thoracic segment. Posterior thoracic segments with few foot-papillae and stomach-papillae and never more than four papillae of both types combined. Thoracic neurosetae include crenulate capillaries only.

Type species: Scoloplos cylindrifer Ehlers, 1905.

Califia Hartman, 1957

Orbiniinae with prostomium pointed. First pair of branchiae on setiger 8 or subsequent thoracic segment. Posterior thoracic neuropodia with not more than two foot-papillae. No stomach-papilla. Thoracic neurosetae of anterior segments include brush-tipped setae, crenulate capillaries and sometimes blunt hooks.

Type species: Califia calida Hartman, 1957.

In accordance with these amended generic definitions certain species will have to be trans-

ferred to different genera. Among these are:

Scolaricia typica Eisig, 1914 becomes *Scoloplos (Scoloplos) typica* (Eisig), n. comb.

Scolarcia haasi Monro, 1937 becomes *Scoloplos (Scoloplos) haasi* (Monro), n. comb.

Scolaricia capensis Day, 1961 becomes *Scoloplos (Scoloplos) capensis* (Day) n. comb.

Scoloplos (Scoloplos) riseri Pettibone, 1957 becomes *Orbinia riseri* (Pettibone) n. comb.

Scoloplos (Scoloplos) schmitti Pettibone, 1957 becomes *Califia schmitti* (Pettibone)

Scoloplos (Leodamas) fimbriatus Hartman, 1957 becomes *Orbinia fimbriata* (Hartman) n. comb.

Key to genera and subgenera of Orbiniinae and the species recorded from North Carolina

1	Prostomium rounded to square in front. (0-2 foot-papillae; no stomach-papillae. (*Naineris*)	No N.C. record
1′	Prostomium conical and pointed	2
2	At least 5 papillae (foot-papillae plus stomach-papillae) on one or more posterior thoracic segments	3
2′	Not more than 4 papillae (foot papillae plus stomach-papillae on any posterior thoracic segment	6
3	Neurosetae of posterior thoracic segments include one or a series of heavy spear-tipped spines as well as blunt hooks. (*Phylo*)	4
3′	Neurosetae of posterior thoracic segments lack heavy spear-tipped spines. (*Orbinia*)	5
4	No interramal cirrus between notopodia and neuropodia of abdominal segments. Heavy spear-tipped spines not always distinct	*Phylo ornatus*
4′	A long interramal cirrus on anterior abdominal segments. Heavy spines with arrow-shaped tips	*Phylo felix*
5	Branchiae from setiger 6. No interramal cirrus on abdominal segments	*Orbinia americana*
5′	Branchiae from setiger 8-10. An interramal cirrus on abdominal segments	*Orbinia riseri*
6	Anterior thoracic neurosetae include brush-tipped setae as well as crenulate capillaries and sometimes blunt hooks. (*Califia*)	No N.C. record
6′	Anterior thoracic neurosetae without brush-tipped setae	7
7	Thoracic neurosetae of adults include only crenulate capillaries. (*Haploscoloplos*)	8
7′	Thoracic neurosetae of adults include rows of hooks as well as crenulate capillaries. (*Scoloplos*)	10
8	An interramal cirrus between abdominal notopodia and neuropodia	9
8′	No interramal cirrus. [Abdominal neuropodia with lobes longer than branchiae; no ventral cirrus]	*Haploscoloplos foliosus*

9	A ventral cirrus below anterior abdominal neuropodia	*Haploscoloplos fragilis*
9′	No ventral cirrus	*Haploscoloplos robustus*
10	First pair of branchiae on setiger 5-6. *Scoloplos (Leodamas).* [Abdominal neuropodia with inner lobe much shorter than outer; no ventral cirrus]	*Scoloplos (L.) rubra*
10′	First pair of branchiae on setiger 8-10 on some subsequent segment *Scoloplos (Scoloplos)*	11
11	One or two foot-papillae on last thoracic neuropodia; 1-ventral cirri on anterior abdominal segments	*Scoloplos (S.) acmeceps*
11′	One foot-papilla on last thoracic neuropodia; no ventral cirri on anterior abdominal segments	12
12	Eighteen or nineteen thoracic setigers with branchiae from setiger 17-18. No brown bars on posterior thorax	*Scoloplos (S.) acmeceps*
12′	Seventeen or eighteen thoracic setigers with branchiae from setiger 13-14. Brown bars across thorax from setiger 9.	*Scoloplos (S.) capensis*

Phylo ornatus (Verrill, 1873)

Orbinia ornata. - Hartman, 1945: 28. - Pettibone, 1963a:285, Fig. 75 a-b.
Phylo ornatus. - Hartman, 1957: 265, pl. 24: Fig. 1-10; - 1969: 41, Fig. 1-5.

Records.—Cape Hatteras area to Beaufort, intertidal to 10 m (5, 9, 11, 13, 18).

Distribution.—Massachusetts to the Gulf of Mexico; California to Pacific coast of Mexico; intertidal to 32 m.

Phylo felix Kinberg, 1866

Phylo felix. - Hartman, 1957: 262, pl. 23: Fig. 1-7.

Records.—Off Beaufort in 120-200 m (*).

Distribution.—Brazil south to Antarctica; California to Pacific coast of Mexico; in shallow dredgings to 200 m.

Orbinia americana New Species

Figure 12c-g

Holotype.—USNM 43138.

Description.—Holotype incomplete, and 10 mm long for 38 segments. Prostomium acutely pointed and without eyes. Thorax (Figure 12c) of 21 flattened setigers. Branchiae from setiger 5. Notopodial lobes evident from setiger 1. Thoracic neuropodia (Figure 12d) as lateral ridges with an increasing number of foot-papillae; setiger 3 with three; setiger 4 with four; setiger 18 with seven. Stomach-papillae from setiger 17 to 22 with a maximum of seven stomach-papillae on setiger 20. Thoracic notosetae as tufts of crenulate capillaries plus two or three forked setae with unequal prongs. Thoracic neurosetae as three rows of hooks with a few crenulate capillaries behind them at upper and lower margins. No enlarged spines. Individual hooks (Figure 12e) with smooth, curved ends.

Abdominal parapodia dorsal in origin, with two or three foot-papillae below neuropodia of first few. Branchiae larger than slender post-setal lobes of notopodia. No interramal cirri. Neuropodia (Figure 12 g) bilobed with inner lobe shorter and stouter than outer. First five abdominal neuropodia with two cirri basally; sixth and subsequent neuropodia with only the superior one persisting as a ventral cirrus. Abdominal notosetae include numerous capillaries and three or four short forked setae. Abdominal neurosetae include two acicula, one or two long flail-setae with faintly serrated shafts and abruptly tapered tips (Figure 12f), and two or three shorter, evenly tapered crenulate capillaries.

Remarks.—This species is allied to *Orbinia swani* Pettibone, but there are fewer thoracic

segments, fewer foot-papillae and fewer stomach-papillae.

Records.—One specimen off Beaufort in 122 m (*).

Orbinia riseri (Pettibone, 1957) New Combination

Figure 12h-l

Scoloplos (Scoloplos) riseri Pettibone, 1957: 163, Fig. 2 a-d; 1963a: 288, Fig. 74 e-f.

Description.—Body without color markings, 50-60 mm long. Prostomium (Figure 12h) sharply conical. Thorax of 18-19 setigers with branchiae from 10th setiger (or 8th in juveniles). Notopodial postsetal lobe well developed from setiger 1. Thoracic neuropodia as lateral ridges with one large foot-papilla from setiger 3, two on 10th foot and three on 16th. Stomach-papillae increasing from 1 below 16th foot to 14-18 at junction of thorax and abdomen (Figure 12i). Abdominal notopodia as chopper-shaped lobes smaller than the branchiae. A well-developed interramal cirrus (Figure 12l). Abdominal neuropodia bilobed; several stomach-papillae below first few abdominal neuropodia decreasing to 2 on setiger 26 (7th abdominal segment) and thereafter flattened to form two lamellar expansions at base of neuropodium.

Thoracic notosetae as crenulate capillaries. Abdominal notosetae with three or four forked setae among capillaries. Thoracic neurosetae in four or five vertical rows; an anterior row of crenulate capillaries with blades broadened basally, then two or three rows of hooks and a posterior row of fine capillaries. Individual hooks (Figure 12j) blunt and well serrated, with delicate sheaths. Abdominal neurosetae with two acicula, two or three fine crenulate capillaries, and one or two long flail-setae (Figure 12k) with serrated shafts and abruptly tapered tips.

Remarks.—This species has been described in some detail as the original description was based on a specimen only 25 mm long and presumably a juvenile with branchiae from setiger 8. It has been transferred to the genus *Orbinia* since it possesses many stomach-papillae.

Records.—Off Beaufort in 120-160 mm (*).

Distribution.—Massachusetts to the Gulf of Mexico; intertidal to 160 m.

Scoloplos (Scoloplos) capensis (Day, 1961) New Combination

Figure 12m-q

Scolaricia capensis Day, 1961: 480, Fig. 1 p-s; 1967: 549, Fig. 23.5. a-d; - Day, Field, and Montgomery, 1971: 122.

Description.—Body up to 25 mm long for 105 segments with brown bars across thorax from setiger 9 to 17 when fresh. Prostomium (Figure 12m) sharply pointed, longer than broad. Thorax with 16-17 setigers and branchiae from setiger 13-14. Notopodia with postsetal lobes obvious from setiger 1, slender anteriorly, longer and stouter in abdomen but never as stout as the branchiae. Thoracic neuropodia (Figure 12n) as low lateral ridges with a single median foot-papilla from setiger 4, increasing in length and moving to a superior position towards end of thorax. No stomach-papilla. Abdominal segments without interramal cirri. Abdominal neuropodia bilobed with inner lobe rather longer than outer and base expanded to form a broad brown unnotched lateral lamella. No ventral cirri.

Notosetae of thorax and abdomen as crenulate capillaries, there being no forked setae. Thoracic neurosetae in five vertical rows; an anterior row of crenulate capillaries, then three rows of hooks and finally a posterior row of crenulate capillaries. Individual hooks (Figure 12o) almost straight, blunt and serrated, with delicate guards. Abdominal neurosetae supported by one aciculum and include a few small crenulate capillaries and one or two longer and stouter flail-setae (Figure 12p).

Remarks.—In accordance with the generic revision described above, *Scolaricia capensis* becomes *Scoloplos (Scoloplos) capensis.* The specimens from North Carolina agree with the holotype from South Africa apart from the fact that the fresh specimens had well-marked brown bars across posterior thoracic segments which were not observed on the holotype. *S. (S.) capensis* is close to *S. (S.) acmeceps* Chamberlin; but it has fewer thoracic segments, the gills appear more anteriorly, and there are no forked setae. No brown bars were noted on *S. (S.) acmeceps.*

Records.—Common off Beaufort in 40-200 m (21, *). This is a new record for the United States.

Distribution.—South Africa in 86 m.

Scoloplos (Scoloplos) cf. *acmeceps* Chamberlin, 1919

[?] *Scoloplos acmeceps*. - Hartman, 1957: 282, pl. 30: Fig. 1-7; 1969: 43, Fig. 1-5.

Description.—Body about 20 mm long and without color markings. Thorax of 18-19 setigers with branchiae from setiger 17 or 18. Postsetal lobe of notopodium short and stout; neuropodia with a single small foot-papilla from setiger 4. Thoracic neurosetae include numerous broad crenulate capillaries and a few serrated and bent hooks inferiorly. Abdomen with notopodia broadly chopper-shaped. No interramal cirri. Neuropodia bilobed with inner ramus longer than outer, and base forming a broad, unnotched flange in place of ventral cirri. Abdominal notosetae as crenulate capillaries only; neurosetae as a few smoothly tapered capillaries and four or five flail-setae with abruptly tapered tips.

Remarks.—Two incomplete specimens were obtained. They agree with Dr. Hartman's description except that they lack forked setae among the abdominal notosetae.

Records.—Off Beaufort in 120-200 m (*).

Distribution.—(of *S. acmeceps*) Alaska south to western Mexico; intertidal.

Scoloplos (Scoloplos) armiger (Müller, 1776)

Scoloplos armiger. - Hartman, 1957: 280, pl. 29: Fig. 1-7. - Pettibone, 1963a: 292, Fig. 76 h-i. - Day, 1967: 544, Fig. 23.6. k-n.

Records.—Off Beaufort in 120-200 m (21, *).

Distribution.—Reportedly cosmopolitan in intertidal to shelf depths but many records doubtful.

Scoloplos (Leodamas) rubra (Webster, 1879)

Scoloplos (Leodamas) rubra. - Hartman, 1951: 74, pl. 20: Fig. 1-6; 1957: 291, pl. 32: Fig. 1-6.

Remarks.—The only points worth adding to Dr. Hartman's description are that the thorax may extend over 24-28 segments, that while most of the thoracic neuropodia lack foot-papillae, one may occur on the last one or two segments and that the abdominal neurosetae are all smoothly tapered crenulate capillaries, flail-setae being absent.

Records.—Cape Hatteras area to Beaufort, intertidal to 200 m (3, 5, 11, 13, 18, *).

Distribution.—North Carolina to Florida; intertidal to 200 m.

Haploscoloplos foliosus Hartman, 1951

Haploscoloplos foliosus Hartman, 1951: 78.

Remarks.—Only two juveniles measuring 8 mm were obtained. Their characters agree with Dr. Hartman's description but adult specimens are required to confirm the record.

Records.—Cape Hatteras area to Beaufort, intertidal and 200 m (18, *).

Distribution.—North Carolina to the Gulf of Mexico; intertidal to 200 m.

Haploscoloplos fragilis (Verrill, 1873)

Haploscoloplos fragilis. - Hartman, 1951: 76, pl. 21: Fig. 1-3; 1957: 271, pl. 25: Fig. 1-3.
Scoloplos (Scoloplos) fragilis. - Pettibone, 1963a: 290, Fig. 76 a-f.

Records.—Cape Hatteras area to Beaufort, intertidal to a few meters (3, 5, 9, 11, 13, 17, 18, *).

Distribution.—Gulf of St. Lawrence to Florida and the Gulf of Mexico; intertidal to 100 m.

Haploscoloplos robustus (Verrill, 1873)

Haploscoloplos bustoris. - Hartman, 1945: 30.
Haploscoloplos robustus. - Hartman, 1951: 78, pl. 21: Fig. 4-6; 1957: 272, pl. 25: Fig. 4-6.
Scoloplos (Scoloplos) robustus. - Pettibone, 1963a: 288, Fig. 76 g.

Records.—Cape Hatteras area to Beaufort; intertidal (2, 3, 5, 9, 11, 13, 17, 18).

Distribution.—Gulf of St. Lawrence to North Carolina and the Gulf of Mexico; intertidal to 57 m.

FAMILY PARAONIDAE

Key to genera and species

1	Prostomium with a median dorsal antenna (may be lost)	2
1′	Prostomium without an antenna	8
2	Posterior notosetae include specialized forms as well as capillaries; posterior neurosetae as capillaries only (*Cirrophorus*)	3
2′	Posterior notosetae are all capillaries. Posterior neurosetae include specialized forms as well as capillaries (*Aricidea*)	4
2″	No specialized setae in notopodia or neuropodia of posterior segments, only capillaries (*Aedicira*)	7
3	Specialized notosetae forked. [Body reddish]	*C. lyriformis*
3′	Specialized notosetae stout, pointed and acicular with a fine subterminal filament	*C. branchiatus*
4	Specialized neurosetae with hoods or guards	5
4′	Specialized neurosetae without hoods but sometimes acicular or abruptly tapered to a slender filament	6
5	Specialized neurosetae with a rounded spioniform hood enclosing a bent unidentate end	*Ar. cerrutii*
5′	Specialized neurosetae with a long pointed guard covering convex side of rostrum	*Ar. fauveli*
6	Specialized neurosetae with a stout shaft tapering to a slender blade with an oblique breaking plane at junction	*Ar. fragilis*
6′	Specialized neurosetae in anterior abdomen with a stout shaft abruptly tapering to a slender filament; in posterior segments only the stout sigmoid shaft persists	*Ar. suecica*
7	Setigers 1-3 with a cirriform postsetal lobe on neuropodium	*Ae. albatrossae*
7′	Merely a minute postsetal papilla on neuropodium of anterior segments	*Ae. belgicae*
8	Posterior notosetae include specialized forms (*Paraonides*)	No N.C. record
8′	Posterior neurosetae include specialized forms (*Paraonis*). [Specialized neurosetae as sigmoid acicular hooks]	9
9	Branchiae cirriform beginning on setiger 6-8 and numbering 9-16 pairs	*P. gracilis*
9′	Branchiae compressed and lamelliform beginning on setiger 4 and numbering 16-25 pairs	*P. fulgens*

Cirrophorus lyriformis **(Annenkova, 1934)**

Aricidea (Cirrophorus) furcata Hartman, 1957: 324, pl. 43: Fig. 6.

Cirrophorus lyriformis. - Hartman, 1965a: 138.
Cirrophorus furcatus. - Hartman, 1969: 69, Fig. 1.

Records.—Off Beaufort in 10-120 m (21, *).

Distribution.—Arctic; off California; New England; Mediterranean; 10 to 500 m.

Cirrophorus branchiatus Ehlers, 1908

Figure 13c

Cirrophorus branchiatus. - Day, 1963a: 423, Fig. 9 i-o; 1967: 563, Fig. 24.3. a-e. - Laubier, 1965: 469, Fig. 1.

Description.—Body about 25 mm long for 120 segments. Prostomium bluntly conical with a short median antenna. Branchiae from setiger 5 to 20-25. Postsetal lobes of notopodia well developed on anterior segments, short on middle segments but long on terminal segments. A heavy spine among notosetae from setiger 13; each spine (Figure 13c) short, bluntly pointed with a fine subterminal filament. No specialized neurosetae.

Remarks.—*Cirrophorus aciculatus* Hartman from deep water off southern California and off Dutch Guinea is very similar but the heavy notopodial spines are not reported to have a subterminal filament.

Records.—Off Beaufort in 20 m (*).

Distribution.—Irish Sea; South Africa; Mediterranean; British Columbia; 20-200 m.

Aricidea cerruti Laubier, 1967

Figure 13b

Aricidea jeffreysii. - Fauvel, 1927: 75, Fig. 25 a-e. - Hartman, 1957: 322, pl. 43: Fig. 2. - Day, 1967: 558, Fig. 24.1.j-m.

Aricidea (Aricidea) jeffreysii. - Pettibone, 1963a: 305, Fig. 80 a-e.

Aricidea cerruti Laubier, 1967: 102, Fig. 1.

Remarks.—The specialized notosetae of posterior segments are sigmoid hooks with spioniform hoods (Figure 13b). Pettibone's Figure 80 e does not show this but the shape is well illustrated by Laubier, Hartman, and Day. Laubier has also shown that the Mediterranean specimens, doubtfully assigned by Cerruti (1909) to *Scolecolepis ? jeffreysii* McIntosh from Greenland, are, in fact, distinct.

Records.—Off Beaufort in 20 m (*).

Distribution.—North Atlantic from Ireland and the Gulf of St. Lawrence to Massachusetts; Mediterranean and Black Sea; South Africa; western Canada; in 1-2,000 m.

Aricidea fauveli Hartman, 1957

Figure 13a

Aricidea fragilis. - Fauvel, 1936: 65, Fig. 6, 7 (*non* Webster).

Aricidea fauveli Hartman, 1957: 318, pl. 43: Fig. 1 (synonymy). - Day, 1967: 560, Fig. 24.2. a-d.

Remarks.—This species is characterized by the special neurosetae of posterior segments (Figure 13a) which are unidentate with a long hood on the convex side of the apex.

Records.—Off Beaufort in 20-160 m (*). This is a new record for the United States.

Distribution.—Morocco and tropical West Africa to South Africa; 20-200 m.

Aricidea fragilis Webster, 1879

Aricidea fragilis. - Hartman, 1945: 30, pl. 6: Fig. 3; 1957: 317, pl. 43: Fig. 3.

Aricidea (Aricidea) fragilis. - Pettibone, 1965: 129, Fig. 1-3.

Records.—Cape Hatteras area to Beaufort, intertidal to 200 m (3, 10, 11, 18, 21, *).

Distribution.—Chesapeake Bay to Gulf of Mexico; intertidal.

Aricidea suecica Eliason, 1920

Aricidea suecica Eliason 1920: 52, Fig. 14-15. - Hartman, 1957: 318; 1969: 65, Fig. 1-5.

Aricidea (Aricidea) suecica. - Pettibone, 1963a: 307, Fig. 80 f, g.

Records.—Off Beaufort in 120 m (*).

Distribution.—Arctic and North Atlantic to the British Isles and North Carolina; southern California; in 5-2,000 m.

Aedicira albatrossae (Pettibone, 1957)

Aricidea (Aricidea) albatrossae Pettibone, 1963a: 305, Fig. 81 a-f.

Remarks.—Only a single anterior fragment with 22 segments was obtained, but the first few

parapodia are so characteristic that the identity is certain without the posterior region. This fresh specimen is slightly different from Dr. Pettibone's description of the type which had been in the museum since 1883.

The anterior dorsum is speckled with dark pigment between the bases of the gills and the postsetal lobes of the notopodia; the latter are shown in Pettibone's Figure 81 e as equal in thickness to the gills, but in this specimen they are only one-third the thickness. *A. albatrossae* is unique among paraonids in having well-developed postsetal lobes on the anterior neuropodia. Those of setigers 1-3 have a broad base narrowing to a cirriform projection but in subsequent segments in the branchial region, only the broad base remains. Towards the end of the branchial region the base flattens to form a small postsetal lamella.

Records.—One specimen off Beaufort in 200 m (*).

Distribution.—Massachusetts; in 150-2,500 m.

Aedicira belgicae (Fauvel, 1936)

Aricidea (Aedicira) belgicae. - Hartman, 1957: 327.
Aedicira belgicae. - Day, 1963a: 424; 1967: 563, Fig. 24.3. f-i. - Hartman, 1965a: 133.

Remarks.—While *A. albatrossae* is easily distinguished by the possession of cirriform postsetal lobes on the neuropodia of the first three setigers, *A. belgicae* merely has a minute papilla on all neuropodia up to the middle of the branchial region. Such papillae were not noted in earlier descriptions and indeed they are easily overlooked, but they were found in South African specimens of *A. belgicae.* Similar papillae were found in *Aricidea fauveli* but not in *Aricidea suecica.* It is possible that they occur in several other paraonids. It may be noted that anterior fragments of *A. belgicae* cannot be identified as the special setae of *Aricidea* spp. are often confined to far posterior segments.

Records.—Off Beaufort in 120-200 m (*).

Distribution.—Atlantic from Greenland to Uruguay, South Africa, and Antarctica; in 30-4,950 m.

Paraonis gracilis (Tauber, 1879)

Paraonis gracilis. - Hartman, 1957: 330, pl. 44: Fig. 4, 5; 1969: 75, Fig. 1-3.
Paraonis (Paraonis) gracilis. - Pettibone, 1963a: 301, Fig. 79 a-d.
Paraonis gracilis gracilis. - Day, 1967: 566, Fig. 24.4. a, b.

Records.—Off Beaufort in 120-200 m (21, *).

Distribution.—Atlantic from Greenland and Denmark to Antarctica and South Africa; Bering Sea; southern California; depth 5-2,000 m.

Paraonis fulgens (Levinsen, 1883)

Paraonis fulgens. - Fauvel, 1927: 71, Fig. 24 g-l.
Paraonis (Paraonis) fulgens. - Pettibone, 1963a: 302, Fig. 79 e-f.

Records.—Cape Hatteras area, intertidal (18).

Distribution.—North Atlantic from Denmark to the English Channel and Maine to Massachusetts; intertidal to 10 m.

FAMILY OPHELIIDAE
Key to genera and species

1	Body stout and maggot-shaped, not grooved ventrally. [Cirriform branchiae on all setigers from second onwards. Lateral swellings above and below posterior parapodia (*Travisia*). Twenty setigers and 3-4 achaetous preanal segments]	*Travisia parva*
1′	Body fusiform or slender, grooved ventrally either from second or 8th-10th setiger onwards	2
2	Ventral groove and branchiae start on 8th-10th setiger (*Ophelia*). [Body with 32 setigers with branchiae from 10th to 27th]	*Ophelia denticulata*

2′	Ventral groove and branchiae start on setiger 2. [Pygidium tubular]	3
3	Small lateral eyespots between parapodia from setiger 6-7 (*Armandia*)	4
3′	No lateral eyespots (*Ophelina*). [Twenty-seven or twenty-eight setigers with branchiae from 2nd to 24th, but those on middle segments reduced and often missing]	*Ophelina cylindricaudata*
4	Twenty-nine setigers, with branchiae from 2nd to 26th. Parapodial lobes all short and globular	*Armandia maculata*
4′	Thirty-six or more setigers, with branchiae from 2nd to last. Anterior feet with elongate and pointed presetal lobes.	*Armandia agilis*

Travisia parva New Species

Figure 13d-f

Holotype.—USNM 43126; one paratype, USNM 43127

Description.—Body of holotype fusiform (Figure 13f), 12 mm long with 24 segments including 20 setigers and 4 achaetous preanal segments. Paratype 6 mm long with 20 setigers and 3 achaetous preanal segments. Prostomium sharply conical; anterior segments triannulate, posterior segments biannulate; no sign of tesselation or papillae. Cirriform branchiae behind notosetae from setiger 2 to 20 but none on achaetous preanals. Anterior segments rounded in section (Figure 13d), 14th and succeeding segments (Figure 13e) with stout lateral swellings above and below setae. Pygidium with about eight short blunt lobes encircling anus.

Remarks.—The other species of *Travisia* recorded from the United States namely *T. carnea* Verrill, *T. profundi* Chamberlin, *T. gravieri* McIntosh, *T. brevis* Moore, *T. granulata* Moore, and *T. pupa* Moore, all have 24 or more setigers; they differ also in the distribution of the branchiae and the presence of granules or pustules on the skin.

Records.—Two specimens off Beaufort in 20-80 m (*).

Ophelia denticulata Verrill, 1875

Ophelia denticulata Verrill, 1875: 39. - Tebble, 1953: 362.

Ophelia neglecta Schneider, 1892: 1, pl. 14. - Fauvel, 1927: 132, Fig. 46 g-h.

Ophelia limacina. - Hartman, 1942a: 130 (*non* Rathke).

Records.—Cape Hatteras area to Beaufort, intertidal to 20 m (18, 21, *).

Distribution.—Maine to North Carolina; English Channel and Atlantic coast of France; intertidal to 20 m.

Armandia maculata (Webster, 1884)

Ophelina maculata Webster, 1884: 322, pl. 11: Fig. 54, 55.

Armandia maculata. - Hartman, 1942b: 129, Fig. 14 a.

Records.—Off Beaufort, in 10-40 m (21, *).

Distribution.—Bermuda; intertidal to 40 m.

Armandia agilis (Andrews, 1891)

Ophelina agilis Andrews, 1891a: 289, pl. 15: Fig. 21-26, 28.

Armandia agilis. - Hartman, 1945: 37; 1951: 97.

Remarks.—*A. agilis* and *A. longicaudata* (Caullery) from the Indian Ocean are very alike. Both are large species with a long tapered presetal lobe on the anterior parapodia and gills from the second to the last setiger. The main difference is that *A. agilis* has 36-52 segments while *A. longicaudata* has only 30-32.

Records.—Cape Hatteras area to Beaufort, intertidal to 40 m (5, 9, 11, 13, 15, 18, *).

Distribution.—North Carolina and the Gulf of Mexico; intertidal to 40 m.

Ophelina cylindricaudata (Hansen, 1879)

Figure 13g

Ophelina cylindricaudata. - Støp-Bowitz, 1945: 49, Fig. 5.

[?] *Ammotrypane chaetifera* Hartman, 1965a: 187, pl. 43.

Description.—Body slender, tapered at both ends, 8-19 mm long for 26-28 setigers. No achaetous preanal segments. Prostomium conical and pointed. A ventral groove starting from setiger 2. Parapodial lobes uniformly small and button-shaped. Cirriform branchiae from setiger 2 to 24, followed by 3-4 abranchiate setigers (Figure 13g). Branchiae of middle segments small or occasionally absent. No lateral eyespots between parapodia. Pygidium cylindrical and about equal to length of last five or six setigers. Superior anal cirri as mere crenulations on dorsal lobe over anus; ventral cirrus stout, annulated and digitiform. Anterior setae fairly long, those of middle segments progressively shorter and those posterior abranchiate segments stout, almost acicular.

Remarks.—As originally described by Hansen, *Ammotrypane cylindricaudata* was said to have 34 setigers, but Støp-Bowitz (1945) states that the type has 28 setigers and that the branchiae in the middle of the body are very variable; in some they are slightly reduced, in others very small or even absent. Possibly *A. chaetifera* Hartman, which has gills on a few anterior and a few posterior segments, but none over most of the body, is synonymous. Støp-Bowitz has shown that *Ophelina* Oersted antedates *Ammotrypane* Rathke, by a few months.

Records.—Common off Beaufort in 120-200 m (21, *).

Distribution.—Norway; Greenland; Canada; Mediterranean; 30-911 m.

FAMILY SCALIBREGMIDAE

Key to genera and species

1	Anterior setigers with branched gills and posterior setigers with dorsal and ventral cirri. No acicular setae (*Scalibregma*).	*S. inflatum*
1′	Body without gills or any parapodial projections. No acicular setae. (*Hyboscolex*)	*H. longiseta*

Scalibregma inflatum Rathke, 1843

Scalibregma inflatum. - Fauvel, 1927: 123, Fig. 44 a-f. - Day, 1967: 590, Fig. 27.2. e-j. - Hartman, 1969: 313, Fig. 1-4.

Records.—Cape Hatteras area and Beaufort, intertidal and 160 m in mud (18, *).

Distribution.—Cosmopolitan from the Arctic to the Antarctic; intertidal to 160 m in mud.

Hyboscolex longiseta Schmarda, 1861

Figure 13h, i

Hyboscolex longiseta. - Day, 1967: 584 (synonymy), 588, Fig. 27.2. a-d.

Oncoscolex pacificus. - Hartman, 1969: 311, Fig. 1, 2.

Description.—Body arenicoliform, up to 20 mm long for 60 segments; color pale to black. Prostomium (Figure 13h) with stout lateral projections and thus broadly T-shaped. Eyes visible if prostomium extended. Buccal segment very short and achaetous. Anterior segments (Figure 13i) with four annuli; posterior ones with two or one. No parapodial projections, the setae projecting directly from body wall. No gills or cirri. Setae as smooth capillaries plus a few short forked setae feathered on inner margins; no acicular setae.

Remarks.—The synonymy of the genera *Hyboscolex*, *Oncoscolex*, *Eumenia*, and *Polyphysia* is confused. Discussion will be found in Day (1961: 216; 1967: 584).

Records.—On corals off Beaufort in 18 m (20, *).

Distribution.—South Africa and western Canada to Pacific coast of Mexico; intertidal to 10 m.

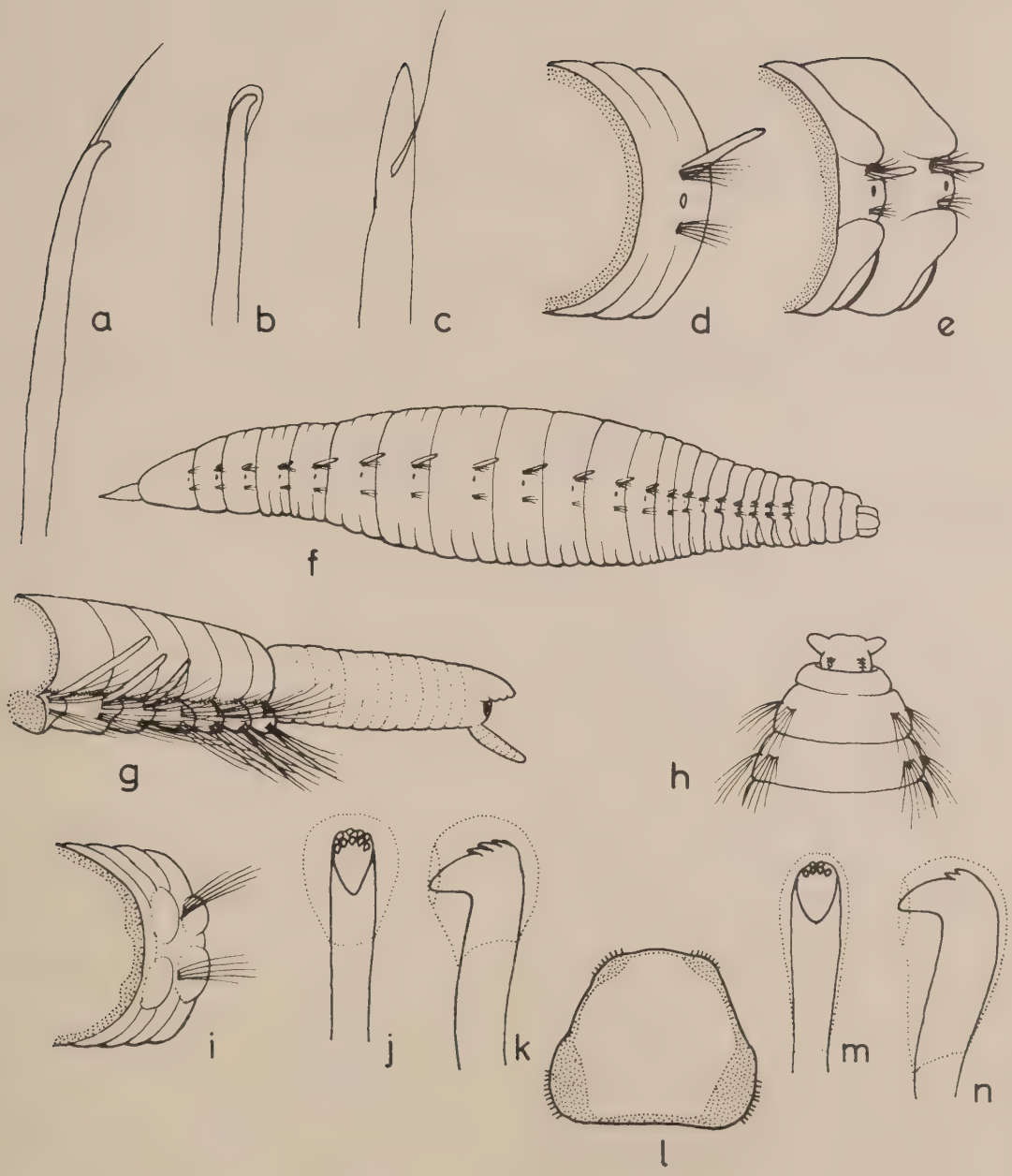

Figure 13.—*Aricidea fauveli* a, specialized posterior neuroseta. *Aricidea cerrutii* b, specialized posterior neuroseta. *Cirrophorus branchiatus* c, specialized notoseta. *Travisia parva* n. sp. d, anterior segment; e, two posterior segments; f, lateral view of body. *Ophelina cylindricaudata* g, posterior end. *Hyboscolex longiseta* h, head; i, parapodium. *Leiochrides pallidior* j and k, face view and profile of hook. *Notomastus americanus* n. sp. l, cross-section of abdominal segment; m and n, face view and profile of hook.

FAMILY ARENICOLIDAE

Only one genus and species known from North Carolina.

***Arenicola cristata* Stimpson, 1856**

Arenicola cristata. - Wells, 1961: 10, pl. 1-4; 1962: 333, pl. 1, 2. - Hartman, 1969: 415, Fig. 1.

Records.—Cape Hatteras to Beaufort (1, 5, 7, 11, 13, 18, *).

Distribution.—Massachusetts to the West Indies, Gulf of Mexico, and California; burrows in muddy sand on sheltered beaches.

FAMILY CAPITELLIDAE

Key to genera and species

Note.—Generic distinctions are based mainly on the distribution of setal types in the thorax. In the following key this is shown by a thoracic formula where:

C = capillary seta P = peristome
O = without seta H = hooded hook

Notosetae are shown above the line and neurosetae below. The total number of thoracic segments includes the peristome.

1	Thorax with 9 setigerous segments including the setigerous peristome. [First 5-7 segments with capillary setae and remainder with hooks in female but notosetae of setigers 8 and 9 as stout genital setae in male (*Capitella*). No branchiae or parapodial projections on abdominal segments]	2
1′	Thorax with 10 or more setigerous segments following the achaetous peristome	2
2	Ten thoracic setigers following peristome. [Formula: $P + \frac{4C + 6H}{4C + 6H} = 11$. Abdominal neuropodia with short rows of hooks. No gills (*Mediomastus*)]	*M. californiensis*
2′	Eleven thoracic setigers following peristome	3
2″	Twelve thoracic setigers following peristome. [Formula: $P + \frac{12C}{12C} = 13$ (*Leiochrides*)]	*L. pallidior*
2‴	Thirteen to fifteen thoracic setigers following peristome	7
3	Last six thoracic setigers with hooded hooks. [Formula: $P + \frac{5C + 6H}{5C + 6H} = 12$. Saclike gills above neuropodia of terminal campanulate abdominal segments (*Heteromastus*)]	*H. filiformis*
3′	Thorax without hooks or only in last one or two setigers (*Notomastus*)	4
4	All 11 thoracic setigers with capillaries in both rami; formula: $P + \frac{11C}{11C} = 12$. Abdominal neuropodia with superior branchial lobes	5
4′	First thoracic setiger without neurosetae; last setiger sometimes with hooks. No branchiae	6

5	Abdominal neuropodia with obvious straplike branchiae	*N. lobatus*
5′	Abdominal neuropodia with small superior branchial lobes	*N. latericeus*
6	All thoracic neuropodia with capillaries; formula: $P + \frac{11C}{0 + 10C} = 12$. Abdominal hooks with a single arc of 5 to 6 denticles above main fang	*N. hemipodus*
6′	Last thoracic neuropodium with hooks; formula: $P + \frac{11C}{0 + 9C + 1H} = 12$. Hooks with two arcs of 4 and 2 denticles above main fang	*N. americanus*
7	Peristome followed by 13 thoracic setigers bearing capillaries; formula: $P + \frac{13C}{13C} = 14$. Abdominal neuropodia with retractile gill filaments (*Dasybranchus*)	8
7′	Peristome followed by 14-15 thoracic setigers; formula: $P + \frac{14C \text{ or } 15C}{(C \text{ or } 0) + (11C\text{-}13C) + 1H \text{ or } 2H} = 15\text{-}16$. Abdominal neuropodia without gills (*Leiocapitella*)	*L. glabra*
8	Neuropodial gills with about 30 filaments	*D. lumbricoides*
8′	Neuropodial gills with few filaments	*D. lunulatus*

Capitella capitata (Fabricius, 1780)

Capitella capitata. - Fauvel, 1927: 154, Fig. 55 a-h. - Hartman, 1947a: 404, pl. 43: Fig. 1, 2. - Day, 1967: 595, Fig. 28.2. i-m.

Records.—Beaufort Sound, intertidal and dredged in muddy sand (11, 13, 15, 18, *).

Distribution.—Cosmopolitan in black mud of estuaries and protected harbors from 0 to 30 m.

Mediomastus californiensis Hartman, 1944

Mediomastus californiensis Hartman, 1947a: 408, pl. 46: Fig. 3, 4; 1969: 387, Fig. 1-4.

Records.—Common off Beaufort in 10-20 m (20, 21, *).

Distribution.—California; intertidal and estuarine.

Leiochrides pallidior (Chamberlin, 1918)

Figure 13j, k

Leiochrides pallidior Hartman, 1947a: 429; 1969: 383.

Description.—Body about 20 mm long. Prostomium bluntly conical with ventral eyespots. Thorax including an achaetous peristome and 12 setigerous segments with capillary setae in both rami. Abdomen of numerous thin-walled segments with fused notopodial tori and notopodial hook-rows continuous across middorsal line. Interramal organs as prominent papillae between notopodia and neuropodia from last thoracic segment onwards. Abdominal neuropodia with a small superior branchial lobe and long rows of hooks almost meeting on midventral line. Individual hooks (Figure 13j, k) with short hoods and a crest of seven to nine subequal denticles above main fang.

Records.—Four specimens off Beaufort in 160 m (*).

Distribution.—British Columbia and California; intertidal to 89 m.

Heteromastus filiformis (Claparède, 1864)

Heteromastus filiformis. - Fauvel, 1927: 150, Fig. 53 a-l. - Hartman, 1947a: 427, pl. 52: Fig. 1-4; 1969: 377, Fig. 1-5. - Day, 1967: 601, Fig. 28.3. a-d.

Records.—Common in Beaufort Sound on intertidal mudbanks (11, 12, 13, 15, 18, 20, *).

Distribution.—North Atlantic from Sweden and Greenland south to Morocco and the Gulf of Mexico; Mediterranean; South Africa; North Pacific from Japan to southern California; 0-100 m.

Notomastus lobatus Hartman, 1947

Notomastus lobatus Hartman, 1947a: 415, pl. 51: Fig. 1-5; 1969: 399, Fig. 1-5.

Remarks.—A large 150-mm specimen was obtained from burrows in intertidal mudbanks near Cape Fear by members of the Zoology Department, Chapel Hill University. Apart from the straplike branchiae, the flattened ventrum is characteristic. Two commensals were found in the burrows, a polynoid polychaete *Lepidasthenia* sp. and a sluglike bivalve mollusk of the family Montacutidae which creeps over the body of the *Notomastus*.

Records.—North Carolina in intertidal mud (*).

Distribution.—Southern California to Mexico; intertidal to 500 m.

Notomastus latericeus Sars, 1851

Notomastus latericeus. - Fauvel, 1927: 143, Fig. 49 a-h. - Hartman, 1947a: 411. - Day, 1967: 599, Fig. 28.2. a-d.

Records.—Cape Hatteras area and Beaufort, intertidal to 200 m (5, 13, 18, 21, *).

Distribution.—Cosmopolitan, intertidal to 4,360 m.

Notomastus hemipodus Hartman, 1947

Notomastus (Clistomastus) hemipodus Hartman, 1947a: 424, pl. 48: Fig. 1-3; 1951: 103, pl. 24: Fig. 1-3; 1969: 393, Fig. 1-5.

Remarks.—*N. hemipodus* Hartman and *N. aberans* Day are closely related. The individual hooks of *N. hemipodus* have a single arc of five or six denticles above the main fang. In *N. aberans* there are two arcs of denticles, the first arc with four or five larger denticles and the second arc with five to seven smaller denticles.

Records.—Off Beaufort in 120 m (21, *).

Distribution.—Florida and southern California; intertidal to 120 m.

Notomastus americanus New Species

Figure 13l-n

Notomastus n. sp. Day, Field, and Montgomery, 1971: 123.

Holotype.—USNM 43118; 14 paratypes, USNM 43119.

Description.—Holotype almost complete, measuring 18 mm for 55 segments. Color yellowish brown with dark faecal pellets visible through abdominal wall. Prostomium broadly conical with subdermal eyespots at base. An achaetous peristome followed by 11 setigerous thoracic segments. Capillary setae present in all notopodia but absent in first neuropodium, present in setiger 2 to 10 but replaced by hooks in 11th. Formula: $P + \frac{11C}{0 + 9C + IH} = 12$. Abdomen not clearly differentiated but posterior segments with hook-rows on well-marked ridges. Nephridial papillae obscure and branchial projections absent. Hook-rows short throughout; notopodial rows (Figure 13l) separate medially, neuropodial rows separated by a midventral gap longer than a hook-row. Individual hooks (Figure 13m, n) with two arcs of denticles above main fang, first arc with four denticles, second with two; formula: MF : 4 : 2.

Remarks.—*N. americanus* resembles *N. teres* Hartman in lacking neurosetae in the first setiger and in having hooks in the neuropodia of the posterior thorax. It differs in having the hooks confined to the last thoracic segment and in having the abdominal hook-rows all short and widely separated ventrally.

Records.—Fifteen specimens in 80-200 m off Beaufort (21, *).

Leiocapitella glabra Hartman, 1947

Leiocapitella glabra Hartman, 1947a: 438, pl. 54: Fig. 1-3.
Leiocapitella atlantica Hartman, 1965a: 193.

Description.—Prostomium broadly conical, depressed; eyespots indistinct. All segments

short and biannulate and thorax distinguished from abdomen only by nature of setae. An achaetous peristome followed by 14-15 setigerous segments bearing capillaries only or capillaries and hooks. Abdominal segments without branchial projections, and all bearing hooded hooks; hook-rows all short and well separated. Individual hooks with hoods as broad as long and with three denticles in a triangle above main fang.

Remarks.—The material from North Carolina differs in some respects from Hartman's original description and appears to provide a link between *L. glabra* and *L. atlantica*. The distribution of the thoracic setae differs in all four specimens. The first neuropodium may bear capillary setae on one side and not on the other, or the first two neuropodia may lack setae on one side or all the anterior setae may be present. Similarly, hooks may be restricted to the last thoracic neuropodium or the last two thoracic neuropodia. The four formulae are given below:

$$P + \frac{15C}{(C \text{ or } 0) + (C \text{ or } 0) + 12C + 1H} = 16;$$

$$P + \frac{15C}{13C + (C \text{ or } H) + (C \text{ or } H)} = 16;$$

$$P + \frac{14C}{(C \text{ or } 0) + 12C + 1H} = 15;$$

$$P + \frac{14C}{13C + 1H} = 15.$$

Hartman's original description of *L. glabra* was based on two specimens. Both lacked setae in the first neuropodium on both right and left sides, but one had capillaries in the notopodia of 14 segments behind the peristome, while the other had both capillaries and hooks in the 15th segment behind the peristome.

The thoracic formulae are thus:

$$P + \frac{14C}{0 + 12C + 1H} = 15 \text{ and}$$

$$P + \frac{14C + (C \text{ and } H)}{0 + 12C + 2H} = 16.$$

Hartman's description of *L. atlantica* from slope depths off Massachusetts gives the following formula:

$$P + \frac{14C}{0 + 11C + 2H} = 15.$$

If all the specimens are considered together it becomes obvious that the distribution of setae on the thorax is very variable; both capillaries and hooks may occur in the same fascicle, setae may be present on one side and not the other or hooks may replace capillaries in the neuropodia of one or two segments at the end of the thorax. It is best to consider the whole group as one variable species with 15 or 16 thoracic segments, with neurosetae usually lacking from the first setiger and with hooks replacing the capillaries in the last one or two neuropodia.

Records.—Off Beaufort in 40-80 m (*).

Distribution.—Southern California to the Pacific coast of Mexico; Massachusetts; in 40-200 m.

Dasybranchus lumbricoides **Grube, 1878**

Dasybranchus lumbricoides. - Hartman, 1947a: 431, pl. 56: Fig. 3, 4; 1951: 103; 1969: 373, Fig. 1-3.

Records.—Cape Hatteras to Beaufort, intertidal in muddy sand (5, 11, 12, 13, 18, *).

Distribution.—Philippine Islands; Galapagos Islands; California to Mexico and Florida to North Carolina in intertidal mud.

Dasybranchus lunulatus **Ehlers, 1887**

Dasybranchus lunulatus. - Hartman, 1947a: 432, pl. 56: Fig. 1, 2; 1951: 103.

Records.—Beaufort, intertidal (12, 13).

Distribution.—North Carolina, Florida, and Puerto Rico; intertidal to 4 m in muddy sand.

FAMILY MALDANIDAE

Key to genera and species

1	Head with a prominent cephalic keel but not surrounded by a flattened plate with a raised margin	2
1′	Head with an inclined dorsal plate surrounded by a raised margin	3
2	Pygidium petaloid with a central anus (*Petaloproctus*). [Body including 21 setigers and 2 achaetous preanal segments]	*P. socialis*
2′	Pygidium funnel-shaped with margin encircled by cirri (*Nicomache*). [A deep pocket above anus]	*N. trispinata*
3	Neuropodial spines or hooks present in setiger 1. Pygidium encircled by anal cirri	4
3′	No neurosetae in setiger 1. No anal cirri. Pygidium as a flat or concave plate with a dorsal anus above	8
4	Anal cone protruding beyond ring of long anal cirri and provided with a stout ventral valve (*Praxillella*). [Setiger 1 with 2 neuropodial spines. Five achaetous preanal segments]	*Praxillella* sp.
4′	Anus sunk in a pygidial funnel rimmed with anal cirri	5
5	Setiger 4 with an anterior membranous collar (*Clymenella*). [Eighteen setigers plus 2 achaetous preanal segments. Setiger 1 with about 5 neurosetae]	*C. torquata*
5′	Setiger 4 without a membranous collar	6
6	Twenty-five or more setigers. No achaetous preanal segments (*Macroclymene*). [Eye spots on prostomium. Setigers 1-3 with 1-3 neuropodial spines]	*M. zonalis*
6′	Twenty-one or fewer setigers. Achaetous preanal segments present.	7
7	Setiger 1 with 4 or more neuropodial hooks similar to those in setiger 4 (*Axiothella*). [18 setigers and 2 achaetous preanal segments]	*A. mucosa*
7′	Setigers 1-3 with 1-3 neuropodial spines bearing vestigial denticles or none and quite unlike hooks of setiger 4 (*Euclymene*)	No N.C. record
8	Segments 7-11 dorsally covered with numerous short gill filaments (*Branchioasychis*). [19 setigers]	*B. americana*
8′	Segments 7-11 without gill filaments. [Cephalic ridge low, cephalic plate deeply incised laterally (*Asychis*). Margin of cephalic plate smooth. Pygidium with a ventral pocket]	9
9	Body of 19 setigers with numerous blisters or pustules from 6th onwards. Cephalic rim low laterally and forming a shallow pocket posteriorly (*A. elongata*)	No N.C. record
9′	Body of 18 setigers without blisters or pustules. Cephalic rim high laterally and forming a very deep pocket posteriorly	*A. carolinae*

Petaloproctus socialis Andrews, 1891

Petaloproctus socialis Andrews, 1891a: 295, pl. 17: Fig. 36-41. - Hartman, 1945: 40, pl. 8: Fig. 3, 4.

Remarks.—As in the widely distributed species *P. terricola* Quatrefages, there is a tendency for the last few setigers to develop dorsal fleshy lobes which slant backwards over the next segment. However, the two species are easily distinguished for *P. terricola* has 22 setigers while *P. socialis* has 19. According to Arwidsson (1906: 118), *Petaloproctus filifer* (Verrill) from Massachusetts has 21 setigers.

Records.—On sheltered sandbanks in Beaufort Sound and in dredgings offshore in 20 m (5, 7, 11, 15, 21, *).

Distribution.—North Carolina; intertidal to 20 m.

Nicomache trispinata Arwidsson, 1906

Figure 14a

Nicomache trispinata Arwidsson, 1906: 104, pl. 2: Fig. 74-77, pl. 3: Fig. 78, 79, pl. 8: Fig. 257-261, pl. 11: Fig. 349.

Description.—Body broken and number of segments uncertain. Head speckled with brown; two groups of ocelli anteriorly; cephalic crest high, nuchal grooves curved; no cephalic plate or raised margin. Setigers 1 to 3 with a single stout, smooth spine in each neuropodium. Setigers 4 and 5 with 10 or more neuropodial hooks. Individual hooks with poorly marked tendons and a vertical series of four teeth above main fang. Posterior end (Figure 14a) with a short, poorly defined achaetous preanal segment. Pygidium slanting, with a central anus below a deep pocket extending forward to level of achaetous preanal segment. Pygidial funnel rimmed with 24 subequal triangular cirri.

Remarks.—The material is fragmentary so that final identification is uncertain. The observed characters agree with Arwidsson's description of specimens from Norway which have 23 setigers and 1 achaetous preanal segment.

Records.—Fragments of five specimens from sand at 20 m off Beaufort (*).

Distribution.—Norway and Greenland; 50-350 m.

Praxillella sp.

Description.—All specimens broken thus total length and number of setigers unknown. Prostomium bluntly triangular with numerous eyespecks. Cephalic plate oval with rim high, smooth and without obvious lateral or posterior notches. Nuchal grooves straight, ¾ length of plate. Setigers 1, 2, and 3 with 2-3-3 neuropodial spines, each with three vestigial denticles above rostrum and a whisp of tendon below. Posterior end with five achaetous preanal segments preceding pygidial ring. First preanal as long as last setiger, second slightly shorter, third half the length of last setiger and fourth and fifth rudimentary and together equal to length of third preanal. Pygidium with a circular ridge bearing a ring of 10 long anal cirri and a protruding anal cone. Anus with a large ventral valve. Individual hooks with a compact vertical series of five teeth above main fang and two or three tendons below.

Remarks.—As far as I am aware, no species of *Praxillella* with five achaetous preanal segments has been recorded from the United States, but until the number of setigers can be determined from a complete, unbroken worm, no specific identification is possible.

Records.—Off Beaufort in 80-200 m (*).

Clymenella torquata (Leidy, 1855)

Clymenella torquata. - Hartman, 1945: 40, pl. 8: Fig. 1, 2.

Records.—Cape Hatteras to Beaufort; intertidal to 50 m (3, 5, 8, 11, 15, 18, *).

Distribution.—Massachusetts to North Carolina; intertidal to 50 m in sandbanks.

Macroclymene zonalis (Verrill, 1874)

Clymenella zonalis. - Magnum 1962: 7.

Records.—Abundant at Beaufort, intertidal to 40 m (16, 21, *).

Distribution.—North Carolina; intertidal to 40 m.

Axiothella mucosa (Andrews, 1891)

Axiothea mucosa Andrews, 1891a: 294, pl. 16: Fig. 29-35.

Axiothella mucosa. - Hartman, 1945: 38, pl. 8: Fig. 5, 6; 1951: 104, pl. 1.
Clymenella mucosa. - Mangum, 1962: 5.

Records.—Beaufort Sound, intertidal (5, 7, 11, 13, 15, 16, *).

Distribution.—North Carolina to Florida; forms massed tubes in intertidal sandbanks.

Branchioasychis americana Hartman, 1945

Maldane elongata. - Andrews, 1891a: 294 (*non* Verrill).
Branchioasychis americana Hartman, 1945: 40, pl. 9: Fig. 1-4; 1951: 105.

Records.—Beaufort Sound, intertidal (5, 11, 13).

Distribution.—North Carolina to Florida and the Gulf of Mexico; intertidal to 5 m in soft black mud.

Asychis carolinae New Species

Figure 14b-f

Asychis carolinae Day, Field, and Montgomery, 1971: 123 (*nomen nudum*).

Holotype.—USNM 43139; nine paratypes, USNM 43140.

Description.—Holotype complete, 22 mm long by 0.5 mm. Body encased in a slender mud tube and pale in alcohol apart from black flecks on head and first two segments. Prostomium (Figure 14b) broad, flattened, and smoothly curved in front. No eyespots. Cephalic plate oval; raised margin with one deep lateral incision but otherwise smooth; posterior part forming a deep pocket extending back to end of head. Cephalic ridge low, broad, and indistinct. Nuchal grooves strongly curved. Body with 18 setigerous segments. Anterior segments increasingly long; seventh and eighth 8 times longer than broad; ninth and succeeding ones progressively shorter and setiger 18 broader than long. No achaetous preanal segment. Pygidium (Figure 14c) elongated, only slightly shorter than setigers 17 and 18 combined. Anus dorsal with a grooved plate beyond it overhanging a very deep ventral pocket. Setiger 1 without neurosetae; neuropodia of setigers 2 to 4 with 3-5 neuropodial hooks; setiger 5 and subsequent segments with a row of 12-15 hooks. Hooks of setigers 2-4 (Figure 14d) with an arc of 3 denticles above main fang; hooks of subsequent segments (Figure 14e, f) with a close-set cap of 10 teeth above main fang and well-developed tendons below.

Remarks.—Most species of *Asychis*, including the type species *A. biceps*, have a toothed margin around the cephalic plate. *A. capensis* Day from South Africa has a cephalic margin similar to that of *A. carolinae* but it has 19 setigers, 2 preanal segments, and the pygidial plate has no ventral pocket. *Maldane cuculigera* Ehlers, from deep water off Florida has a similar head but it too has 19 setigers and the pygidium is truncate. Possibly the closest is *Asychis elongata* (Verrill), originally named *Maldane elongata* but transferred by Verrill (1900) to the genus *Maldanopsis*, which is now regarded as a synonym of *Asychis*. Dr. Pettibone kindly sent me a specimen identified by Verrill for comparison with *A. carolinae*. The two species are very alike in regard to the head and pygidium but *A. elongata* has 19 setigers and from setiger 6 onwards the body has a scattering of small blisters or pustules. In this respect *A. elongata* is closer to *Branchioasychis americana* Hartman but it lacks the simple branchial filaments which characterize the latter.

Records.—Common off Beaufort in 120-200 m (21, *).

FAMILY OWENIIDAE

Only one genus and species known from North Carolina.

Owenia fusiformis Delle Chiaje, 1844

Owenia fusiformis. - Fauvel, 1927: 203, Fig. 71 a-f. - Day, 1967: 649, Fig. 31.1. e-j.

Records.—Beaufort, intertidal to 200 m (5, 11, 13, 21, *).

Distribution.—Cosmopolitan in temperate and tropical seas from 0 to 200 m.

FAMILY STERNASPIDAE

Only one genus and species known from North Carolina.

Sternaspis scutata (Ranzani, 1817)

Sternaspis scutata. - Fauvel, 1927: 216, Fig. 76 a-g. - Day, 1967: 648, Fig. 31.1. a-d.

Records.—Off Beaufort in 600 m (*).

Distribution.—Cosmopolitan on stiff mud or clay bottoms in 0-600 m.

FAMILY FLABELLIGERIDAE

Key to genera and species

1	Neurosetae as annulated capillaries, very similar to notosetae. Cephalic cage poorly developed. [Eight branchial filaments (*Diplocirrus*). Branchial filaments equal in thickness; neurosetae with a minute terminal hook]	*D. capensis*
1′	Neurosetae as falcate hooks, very different from notosetae. Cephalic cage well developed.	2
2	Neurosetae as articulated hooks. Body covered with very long clavate papillae embedded in a mucilaginous sheath (*Flabelligera*)	*Flabelligera* sp.
2′	Neurosetae as simple hooks often with barred shafts. Surface with short papillae but no mucilaginous sheath	3
3	Neuropodial hooks with unidentate tips. Branchial filaments arranged in a horseshoe-shaped arc. Body with skin papillae numerous but not arranged in longitudinal rows (*Pherusa*)	4
3′	Neuropodial hooks with bidentate tips. Branchial filaments arranged in multiple series on a tongue-shaped lobe. Body with skin papillae arranged in a few longitudinal rows on dorsum and ventrum and whole surface encrusted with sand (*Piromis*). [Two rows of papillae on dorsum and two on ventrum]	5
4	Skin papillae encircling anterior margins of segments. Branchial filaments of two sizes	*Pherusa inflata*
4′	Skin papillae irregularly scattered. Branchial filaments all similar	*Pherusa ehlersi*
5	Neuropodial hooks start on setiger 3 (*Piromis eruca*)	No N.C. record
5′	Neuropodial hooks start on setiger 4.	*Piromis eruca websteri*

Diplocirrus capensis Day, 1961

Diplocirrus capensis Day, 1961: 509, Fig. 9 a-f; 1967: 666, Fig. 32.4. e-j.

Description.—Body muddy brown, arenicoliform, about 15 mm long. Buccal apparatus retractile, consisting of an indistinct prostomial ridge with ocular pigment, a pair of grooved palps and eight subequal branchial filaments. Setiger 1 with two or three elongated notosetae

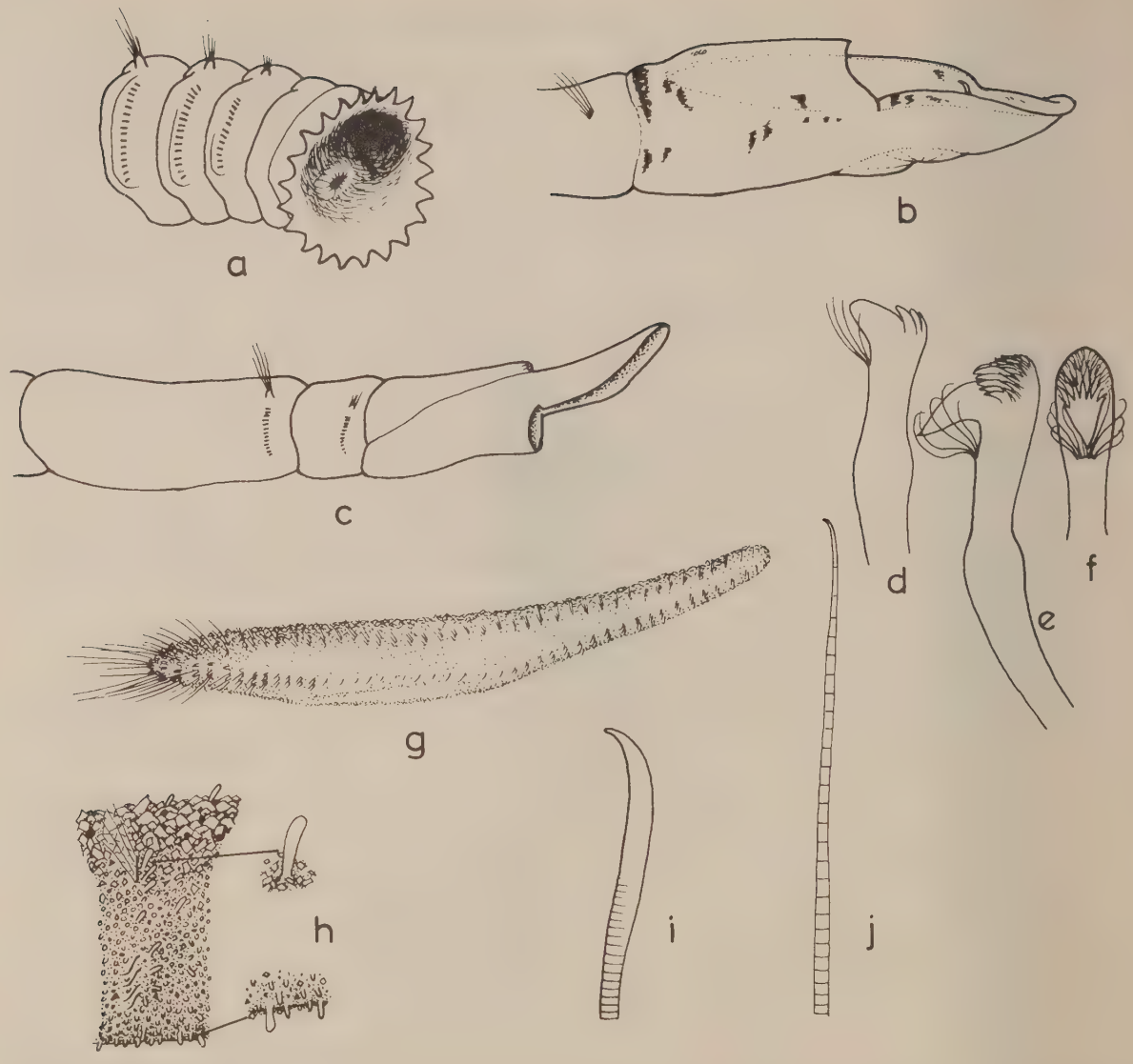

Figure 14.—*Nicomache trispinata* a, posterior end. *Asychis carolinae* n. sp. b, head; c, posterior end; d, hook from setiger 2; e and f, profile and face view of posterior hook. *Pherusa ehlersi* n. sp. g, lateral view of entire worm; h, lateral view of 8th segment showing papillae; i, neuropodial hook from middle segment; j, elongated neuropodial hook from setiger 4.

directed forwards and forming a rudimentary cephalic cage; subsequent segments with shorter setae directed laterally; notosetae include about five barred capillaries; neurosetae as three or four shorter, stouter barred setae each with the curved terminal joint forming a minute hooklet. Body surface densely covered with flask-shaped adhesive papillae. Anterior 9-11 segments swollen and without obvious segmental constrictions; posterior 20 segments forming a narrower "tail" with obvious segmental constrictions.

Remarks.—*D. capensis* differs from *D. glaucus* (Malmgren), the type species of *Diplocirrus* Haase, by having all eight branchial filaments of equal thickness and in other minor characters concerning the setae. In Day (1961: 510), I suggested that the definition of *Diplocirrus* be amended to include *D. capensis*. The amended definition would include *Ilyphagus* Chamberlin.

Hartman (1965a: 178) described *Ilyphagus octobranchus* from slope depths off the coast of New England which thus becomes *Diplocirrus octobranchus* (Hartman). As Dr. Hartman has noted, it differs from *D. capensis* in lacking eyes and in having neurosetae which taper to fine tips instead of ending in minute hooklets.

Records.—Off Beaufort in 120-200 m (21, *). This is a new record for the United States.

Distribution.—South Africa and North Carolina in 120-200 m.

Flabelligera sp.

Remarks.—Over 36 post-larval specimens 3-4 mm long for 13-17 segments were obtained. They all contain orange yolk granules in the midgut. Most of the characters suggest *Flabelligera affinis* Sars. Each neuropodium has a single-jointed falcate hook and the surface is flabby with scattered groups of long club-shaped papillae. The mucilaginous sheath has not developed and there is only a single arc of 8 + 8 branchial filaments on each side of the cephalic ridge.

Records.—Off Beaufort in 40 m (*).

Pherusa inflata (Treadwell, 1914)

Trophonia inflata Treadwell, 1914: 213, pl. 12: Fig. 33.
Stylarioides inflata. - Hartman, 1951: 98.
Pherusa inflata. - Wells and Gray, 1964: 74. - Hartman, 1969: 297, Fig. 1-5.

Records.—Cape Hatteras to Beaufort, intertidal to 50 m (15, 16).

Distribution.—Atlantic from North Carolina to Florida and Pacific from Oregon to Mexico; intertidal to 50 m.

Pherusa ehlersi New Species

Figure 14g-j

Siphonostomum cariboum. - Ehlers, 1887: 158, pl. 42: Fig. 6-9, pl. 43: Fig. 1 (*partim, non* Grube 1859).
Pherusa n. sp. McCloskey, 1970: 26.

Holotype.—USNM 43133.

Description.—Holotype (Figure 14g), 12 mm long for about 40 segments; maximum breadth 2 mm. Surface with small, cylindrical papillae and attached sand grains. Papillae (Figure 14h), longer and less numerous dorsally, shorter and more numerous ventrally. Cephalic cage well developed but poorly defined. Setigers 1-3 with barred capillaries in both rami, all directed forwards. Notopodia of subsequent segments with three of four shorter barred capillaries directed laterally. Neurosetae of setiger 4 (Figure 14j) still slender, barred, and directed forwards but tips definitely curved; neurosetae of setiger 5 as five short simple unidentate hooks; following neurosetae (Figure 14i) similar, but numbers decreasing to one on middle segments and increasing again on "tail" segments. Buccal apparatus including a bulbous lower lip, a pair of stout grooved palps, a prostomial ridge with four eyes, and a semicircular cephalic hood with a single marginal arc of about 20 branchial filaments of uniform thickness.

Remarks.—The holotype is one of a few specimens collected by Dr. L. McCloskey from a coral head growing in 18 m off Beaufort. The sandy crust on the dorsal surface of the body is thin and quite different from the hard head shield of *Ph. parmata* (Grube) or *Ph. inflata* (Treadwell) as redescribed by Hartman (1951). Nonetheless there are several resemblances to the latter species. The cephalic cage is similar and in both, the first neuropodial hooks occur on setiger 4. However, there are also important differences. The thinner sandy crust has been noted. The skin papillae are scattered and do not form rings encircling the anterior margins of the segments, as they do in *Ph. inflata.* The latter species is also reported to have two sizes of branchial filaments, 6 larger ones and 13 smaller.

I believe *Ph. ehlersi* may well be the same as some, but not all of the specimens from Key West described by Ehlers (1887) under the name of *Siphonostomum cariboum* Grube. All the characters are the same except what Ehlers terms the "Kiemfäden tragenden Blatte" here termed the cephalic hood. Ehlers' description and his figure of the branchial apparatus (pl. 42, Fig. 7) was based on "einem anderem" specimen. It shows a tongue-shaped lobe with numerous branchial filaments which is characteristic of the genus *Piromis* to which *S. cariboum* has since been referred. However, other species of *Piromis* (including the type species

P. arenosus Kinberg and *P. eruca websteri* described below) have all the neuropodial hooks annulated and at least the anterior ones bidentate. The skin papillae are in longitudinal rows, and the whole surface is encrusted with sand. I believe that Ehlers' "other specimen" does not refer to the same species as the rest of his description of *S. cariboum* but only a reexamination of Ehlers' specimens can settle this. In the meantime, it is safer to give the Beaufort specimen a new name.

Records.—On corals off Beaufort in 18 m (20, *).

Distribution.—Florida (Key West).

Notes on the genera *Piromis* Kinberg, 1867 and *Pherusa* Oken, 1807

Since *Pherusa eruca* has been recorded from Cape Hatteras by Wells and Gray (1964) and this species has many characters which suggest that it is allied to *Trophonia arenosa* Webster, from Virginia and *Piromis arenosus* Kinberg, the type species of the genus from South Africa, it was necessary to examine the three more carefully. Dr. David George of the British Museum kindly sent me specimens of *Trophonia eruca* Claparède from Naples, which is the type locality, and Dr. Marian Pettibone sent me the specimen from Pamlico Sound identified by Wells as *Pherusa eruca*, as well as the two syntypes of *Trophonia arenosa* Webster from Virginia. Many specimens of *Piromis arenosa* Kinberg were available in my own collections in the University of Cape Town.

It may be said at once that Wells' specimen from Pamlico Sound is not a flabelligerid at all. It has had its head removed, but obviously belongs to the family Poecilochaetidae.

The genus *Piromis* (synonym: *Semiodera* Chamberlin), is characterized by having the branchial filaments arising from the surface of a tongue-shaped lobe in two series each with many irregular rows, whereas *Pherusa* has one series of branchial filaments arising from the edge of a semicircular hood above the cephalic ridge. In addition, *Piromis arenosus* has bidentate neuropodial hooks, a sandy crust covering the body, and relatively few skin papillae, those on the dorsum and ventrum (but not the parapodia) being arranged in a few longitudinal rows. These characters are shared by *Trophonia eruca* Claparède and *Trophonia arenosa* Webster, both of which have been referred to the genus *Pherusa*, while many other species of *Pherusa* have unidentate neuropodial hooks, numerous scattered skin papillae, and no sandy crust. As will be shown, both *Trophonia eruca* and *T. arenosa*, when dissected, proved to have the branchial filaments arranged in multiserial rows on a tongue-shaped lobe. They are in fact species of *Piromis*. Thus the genera *Piromis* and *Pherusa* may be distinguished not only on the origin of the branchial filaments, but also on the bidentate or unidentate neuropodial hooks and the arrangements of the skin papillae. Further, *Piromis* is covered by a sandy crust, while most species of *Pherusa* are not; *Pherusa ehlersi* described above is intermediate.

Piromis eruca (Claparède, 1869) New Combination

Trophonia eruca Claparède, 1869: 105, pl. 15: Fig. 2.

Stylarioides eruca. - Fauvel, 1927: 119, Fig. 42 h-l.

(Non) Pherusa eruca. - Wells and Gray, 1964: 74.

Material examined.—The following description is based on two specimens of *Trophonia eruca* kindly sent me by Dr. David George of the British Museum. They were collected at Naples (the type locality of *T. eruca*) and identified by McIntosh and the registration number is 1921:5:1:2651/2. Both were brown in alcohol, the palps and branchial filaments are missing, and many of the setae are broken.

Description.—Body up to 60 mm long with 73 segments. Surface covered with a sandy crust, well marked dorsally but indistinct ventrally. Skin papillae long, knobbed, and projecting through the sand. Papillae arranged in longitudinal rows, two rows dorsally and two ventrally and groups of about six papillae around each bundle of setae, those around neurosetae extending ventrally. No scattered papillae. Buccal apparatus including a pleated lip around mouth, a pair of large grooved palps, and a dorsal tongue-shaped branchial lobe with an indistinct median cephalic ridge. Four close-set eyes. Branchial filaments in irregular rows in each group. Cephalic cage poorly defined but including forwardly directed capillaries of seti-

gers 1 and 2. Setae of following segments shorter and more laterally directed. Notosetae as five to seven barred capillaries. Neurosetae as five to seven bidentate hooks from setiger 3 onwards.

Remarks.—The buccal apparatus was retracted into a membranous sheath and the structures recorded above were observed after dissection. Many of the branchial filaments were missing but the scars showed that they had been arranged in two multiserial groups on a tongue-shaped lobe as is usual in the genus *Piromis*. The number of filaments was estimated at 30 on each side of the cephalic ridge but Fauvel states that juveniles may have as few as 8-10 filaments. The first hook on setiger 3 was much longer than those on subsequent neuropodia, but is otherwise similar to that shown in Fauvel (1927: Fig. 42 k).

Claparède's *Trophonia eruca* is a typical member of the genus *Piromis*, as shown by the arrangement of the branchial filaments, the distribution of the skin papillae, the sandy dorsal crust, and the bidentate neuropodial hooks. It differs from the type species, *Piromis arenosus* Kinberg, in having only two dorsal and two ventral rows of skin papillae instead of four dorsal and four ventral rows.

As noted earlier the record of Wells and Gray (1964) is incorrect so that *P. eruca* is not known from the United States. However, as shown below, *Trophonia arenosa* Webster is very close.

Distribution.—North Atlantic from the English Channel to southern France; Mediterranean; intertidal to 10 m.

Piromis eruca websteri New Subspecies

Trophonia arenosa Webster, 1879: 245, pl. 7: Fig. 92-97. - (*Non*) *Piromis arenosa* Kinberg, 1867.

Stylarioides arenosa. - Miner, 1950: 372, pl. 118.

Remarks.—Two syntypes of *Trophonia arenosa* Webster were kindly sent to me by Dr. Pettibone of the U.S. National Museum, Washington, D.C. The head of one syntype had been removed but the other syntype, when dissected, proved to have a similar buccal apparatus to that described above for *P. eruca*. The other characters, including the arrangement of the skin papillae and the sandy crust, were also identical. In fact the only difference observed is that the first hook appears in the neuropodium of setiger 4, not 3. This agrees with Webster's original description. This is a small difference from the stem form and possibly further collecting may show that the first hooks may appear on either setiger 3 or 4. However it seems best to consider Webster's species distinct. Webster's original name becomes a junior homonym of *P. arenosa* Kinberg so I have designated it *P. eruca websteri*.

Piromis roberti (Hartman 1951), originally described as *Semiodera roberti* may be conspecific but since the distribution of the skin papillae and the neuropodial hooks were not described, the question must be left open.

Distribution.—Virginia, intertidal.

FAMILY SABELLARIIDAE

Key to genera and species

1	Opercular lobes with stout dorsal hooks at base of operular peduncles; two rows of opercular paleae	2
1′	Opercular lobes without hooks; three rows of paleae. [Middle row of paleae not forming a cone concealing inner row. Three parathoracic segments bearing stout oar-shaped setae (*Sabellaria*)]	3
2	Four parathoracic segments. Outer row of paleae with smooth margins (*Lygdamis*)	No N.C. record
2′	Three parathoracic segments. Outer row of paleae with bipinnate lateral projections (*Idanthyrsus*)	No N.C. record

3	Middle row of paleae alternately long and short	4
3′	Middle row of paleae all of equal length	5
4	Innermost row of paleae produced into short points. Ends of outer paleae with a median denticulate tooth between 2-3 short lateral teeth	*Sabellaria bella*
4′	Innermost row of paleae produced into long spikes resembling long ones of middle row. Outer paleae ending in a long barbed median spike between two short lateral teeth	*Sabellaria floridensis*
5	Middle paleae all produced into long, erect spikes	*Sabellaria gracilis*
5′	Middle paleae all curved or hooked	6
6	Middle paleae long, curved and pointed	*Sabellaria vulgaris vulgaris*
6′	Middle paleae short, hooked and blunt	*Sabellaria vulgaris beaufortensis*

Sabellaria bella Grube, 1870

Sabellaria bella Hartman, 1944b: 342, pl. 33: Fig. 53-66.

Records.—Beaufort, intertidal (10).

Distribution.—North Carolina to South America; intertidal.

Sabellaria floridensis Hartman, 1944

Sabellaria floridensis Hartman, 1944b: 345, pl. 31: Fig. 37-41; 1951: 107.

Records.—Cape Hatteras to South Carolina, intertidal to 30 m; common on corals (13, 14, 18, 19, 20, *).

Distribution.—Florida and North Carolina; intertidal to 30 m.

Sabellaria gracilis Hartman, 1944

Sabellaria gracilis Hartman, 1944b: 343, pl. 34: Fig. 66-72; 1969: 507, Fig. 1-5.

Records.—Cape Hatteras area, intertidal (18).

Remarks.—David W. Kirtley in a personal communication states that this is a very doubtful record.

Distribution.—Southern California; ? North Carolina; intertidal.

Sabellaria vulgaris vulgaris Verrill, 1873

Sabellaria vulgaris Hartman, 1944b: 341, pl. 32: Fig. 42-44. - McCloskey, 1970: 26.

Sabellaria cementarium. - Wells and Gray, 1964: 74 (*non* Moore).

Remarks.—I am indebted to David W. Kirtley for informing me that *Sabellaria cementarium* recorded by Wells and Gray should be referred to *Sabellaria vulgaris.*

Record.—Cape Hatteras to Beaufort, intertidal to 40 m; common on corals and scallops (2, 3, 5, 7, 10, 11, 13, 15, 18, 20, 21, *).

Distribution.—Massachusetts to Georgia; intertidal to 40 m.

Sabellaria vulgaris beaufortensis Hartman, 1944

Sabellaria vulgaris beaufortensis Hartman, 1944b: 342, pl. 32: Fig. 45-47; 1945: 43.

Remarks.—Generally similar to *S. vulgaris vulgaris* except for the paleae of the middle row which are shorter, curled inwards, and very blunt, almost truncate at the end. The two subspecies are found together; typical specimens are easily identified but some intermediates occur.

Records.—Beaufort, intertidal to 40 m (11, 18, *).

Distribution.—North Carolina, 0-40 m.

FAMILY PECTINARIIDAE

Key to subgenera and species

1	Cephalic veil quite free from operculum	2
1′	Caphalic veil completely or partly fused to operculum. [Opercular rim smooth. Fifteen setigers of which 12 have uncini. (subgenus *Lagis*)]	No N.C. record
2	Opercular rim dentate (subgenus *Amphictene*)	No N.C. record
2′	Opercular rim smooth (subgenus *Pectinaria*) [Twelve segments with uncini; uncini with about 7 major teeth; about 15 pairs of scaphal hooks]	*P. (Pectinaria) gouldii*

Pectinaria (Pectinaria) gouldii
Verrill, 1873

Pectinaria (Cistenides) gouldii. - Hartman, 1941b: 328, pl. 50: Fig. 11, 17, pl. 52: Fig. 20.
Cistenides gouldii. - Hartman, 1942a: 74, Fig. 130, 135, 138.

Records.—Cape Hatteras to Beaufort, intertidal to 120 m (2, 3, 5, 7, 9, 11, 13, 15, 18, *).
Distribution.—Massachusetts to Florida and the West Indies; intertidal to 120 m.

FAMILY AMPHARETIDAE

Key to genera and species

1	Small acicular neurosetae embedded laterally on segments 3-6. Short, stout notopodial hooks sometimes present behind gills (*Melinninae*)	2
1′	No neurosetae laterally on segments 3-6. No hooks behind gills. [Large paleae sometimes present on segment 3 (*Ampharetinae*)]	4
2	Postbranchial hooks present	3
2′	No postbranchial hooks. [Thirteen uncinigerous thoracic segments. Ridge across segment 6 dentate]	*Melinnopsis atlantica*
3	Fourteen uncinigerous thoracic segments. Ridge across segment 6 dentate. All 4 pairs of gills smooth	*Melinna maculata*
3′	Thirteen uncinigerous thoracic segments. Ridge across segment 6 smooth-edged. Four pairs of gills; two pairs smooth and two pairs pinnate	*Isolda pulchella*
4	Two pairs of gills; [12 uncinigerous thoracic segments. First two rows on uncini long and ventrally placed]	*Auchenoplax crinita*
4′	Three pairs of gills; [12 uncinigerous thoracic segments. Buccal tentacles smooth. No glandular ridges on prostomium]	*Samythella eliasoni*
4″	Four pairs of gills	5

5	Two diverging glandular ridges on prostomium	6
5′	No glandular ridges on prostomium. [Twelve uncinigerous thoracic segments]	7
6	Eleven uncinigerous thoracic segments. Small capillaries on segment 3	*Amage auricula*
6′	Fourteen uncinigerous thoracic segments. Large paleae on segment 3. [Notopodia with papilliform dorsal cirri]	*Amphicteis gunneri*
7	Large paleae on segment 3	*Amparete acutifrons*
7′	Either small capillaries or no setae on segment 3	8
8	Innermost gill of each group much shorter than others; a wide median gap between the two groups of gills. Thoracic uncini with two rows of three teeth.	*Ampharete parvidentata*
8′	Gills not very different in length; median gap between groups of gills not obvious. Thoracic uncini with two rows of five teeth	*Ampharete americana*

Melinnopsis atlantica McIntosh, 1885

Melinnopsis atlantica McIntosh, 1885: 441, 27A: Fig. 18.

Syntypes.—Three fragmentary syntypes from 3,110 m off Chesapeake Bay; British Museum Catalogue No. 1885:12:1:330.

Description.—Types broken and poorly preserved thus several features uncertain. Prostomium normal but detailed shape doubtful. Buccal tentacles grooved. An oblique fleshy ridge slanting up from behind mouth and forming a dorsal crest across segment 6. Presence or absence of toothed margin to dorsal crest uncertain due to poor preservation. Segment 3 with a branchial ridge bearing two groups of four gills arranged three in front and one behind. Gills long smooth and tapered. Fine acicular neurosetae embedded in sides of segments 3, 4, 5, and 6. No notosetae on segments 3 and 4 but small tufts of capillaries on segments 5 and 6. Segment 7 and subsequent thoracic segments with winged capillaries on notopodia and single row of uncini in neuropodia. Posterior end of thorax disintegrated and number of uncinigerous thoracic segments uncertain although 10 recorded in original description. Thoracic notopodia and neuropodia without cirriform projections. Abdomen broken and number of segments now uncertain although 25-35 implied in original description. Uncinigerous pennules, rectangular, without superior papillae. Rudimentary notopodial lobes present on some abdominal segments. Thoracic uncini with a single vertical series of four or five teeth above small rostral point and basal prow. Abdominal uncini with seven or eight teeth arranged in two irregular rows above very small rostral point and basal prow.

Remarks.—Since the original description given by McIntosh was incomplete, Dr. David George of the British Museum kindly sent me the type material to check certain points. The emended description given above records for the first time the presence of a fleshy ridge across segment 6 and acicular neurosetae on the side of the same segment. Again, there may have been more than the 10 uncinigerous thoracic segments mentioned in the original description.

A fresh specimen of *Melinnopsis* was dredged in 3,020 m at lat 36°02′30″N, long 73°51′W by RV *Eastward* (*Eastward* Station 2756, September 15, 1965). Unfortunately the specimen is now missing but the following details show that it was close to, if not conspecific with *M. atlantica* which was found further north but at the same abyssal depth.

The head, gills, and setation of segments 3-6 agree with *M. atlantica* but in the fresh specimen it was possible to see that the dorsal ridge across segment 6 was incised to form 16 triangular lobes. The thorax was complete

and had 13 segments with both notosetae and uncini. The thoracic uncini had four or five teeth above the rostral point. The abdomen was broken at the 13th segment; the uncinigerous pinnules were rectangular as in *M. atlantica* and there were rudimentary notopodial lobes above the first three uncinigerous pinnules.

In view of the fact that all the characters which can be checked on the type material agree with those recorded on the fresh specimen and that the only points of difference concern features which are probably due to the poor condition of the syntypes, it is proposed that *Melinnopsis atlantica* be defined as having a ridge across segment 6 divided into 16 triangular lobes and possessing 13 uncinigerous thoracic segments starting from segment 7.

As shown by Day (1964), the related genera of the subfamily Melinninae with two groups of four gills are *Melinnexis* Annekova, with 14 uncinigerous thoracic segments and *Melinnides* Wesenberg-Lund, with 12. Both of these genera have an enlarged tentacular process.

Records.—One specimen off Beaufort in 3,020 m (*).

Distribution.—Off Chesapeake Bay in 3,110 m.

Melinna maculata Webster, 1879

Melinna maculata Webster, 1879: 261, pl. 10: Fig. 145-147. - Hartman, 1951: 108, pl. 27: Fig. 1, 2.
Melinna cristata. - Hartman, 1945: 43 (*non* Sars).

Records.—Cape Hatteras to Beaufort, intertidal (3, 11, 13, 18).

Distribution.—Virginia to the Gulf of Mexico; intertidal to 10 m.

Isolda pulchella Müller, 1858

Figure 15a-f

Isolda pulchella. - Augener, 1918: 517, pl. 7: Fig. 229, text Fig. 88. - Day, 1967: 691, Fig. 35.1. k-n.

Description.—Body up to 45 mm long, pale brown in color with barred tentacles. Prostomium (Figure 15a) a curved hood pinched in laterally. Numerous minute eyespots. Buccal tentacles grooved and arise from a shelf in roof of mouth. Oblique lateral folds extending from ventrum of segment 3 around sides of branchial region and uniting with a transverse ridge across segment 6. Margin of transverse ridge smooth (Figure 15b). Two groups of four gills on segment 3; gills in each group fused basally; outer two gills smooth and cirriform, inner two gills pinnate. Notosetae of branchial segments include a stout hook on segment 4 (Figure 15c) and small tufts of winged capillaries on segments 5 and 6. Neurosetae of branchial segments as fine acicular setae (Figure 15d) deeply embedded on sides of segments 3, 4, and 5 but not 6. Thirteen uncinigerous thoracic segments starting from segment 7. About 32 abdominal segments with square uncinigerous pinnules; no vestigial notopodia. Thoracic uncini (Figure 15e, f) with a single vertical series of five or six teeth above small rostrum and basal prow.

Records.—A single specimen from 20 m off Beaufort (*). This is a new record for the United States.

Distribution.—Brazil and tropical West Africa; intertidal to 20 m.

Auchenoplax crinita Ehlers, 1887

Auchenoplax crinita Ehlers, 1887: 209, pl. 44: Fig. 10-16. - Hartman, 1965a: 216, pl. 47: Fig. a-d.

Records.—Off Beaufort in 600 m (*).

Distribution.—Massachusetts to South America and Morocco in 200-1,500 m.

Samythella eliasoni New Species

Figure 15g-m

Eclysippe vanelli. - Eliason, 1955: 10, Fig. 3 a-l. - (*Non*) *Lysippe vanelli* Fauvel, 1936: 96, Fig. 13 a-d.

Holotype.—USNM 43145.

Description.—Holotype colorless in alcohol, 10 mm long, and encased in a friable mud tube. Prostomium (Figure 15g) as a flattened triangular lobe overhanging mouth; no glandular prostomial ridges but one pair of small eyes. Short grooved buccal tentacles protruding from mouth. Branchial ridge above segment 3 well developed with right and left groups of three gills narrowly separated in median line. Gills all very

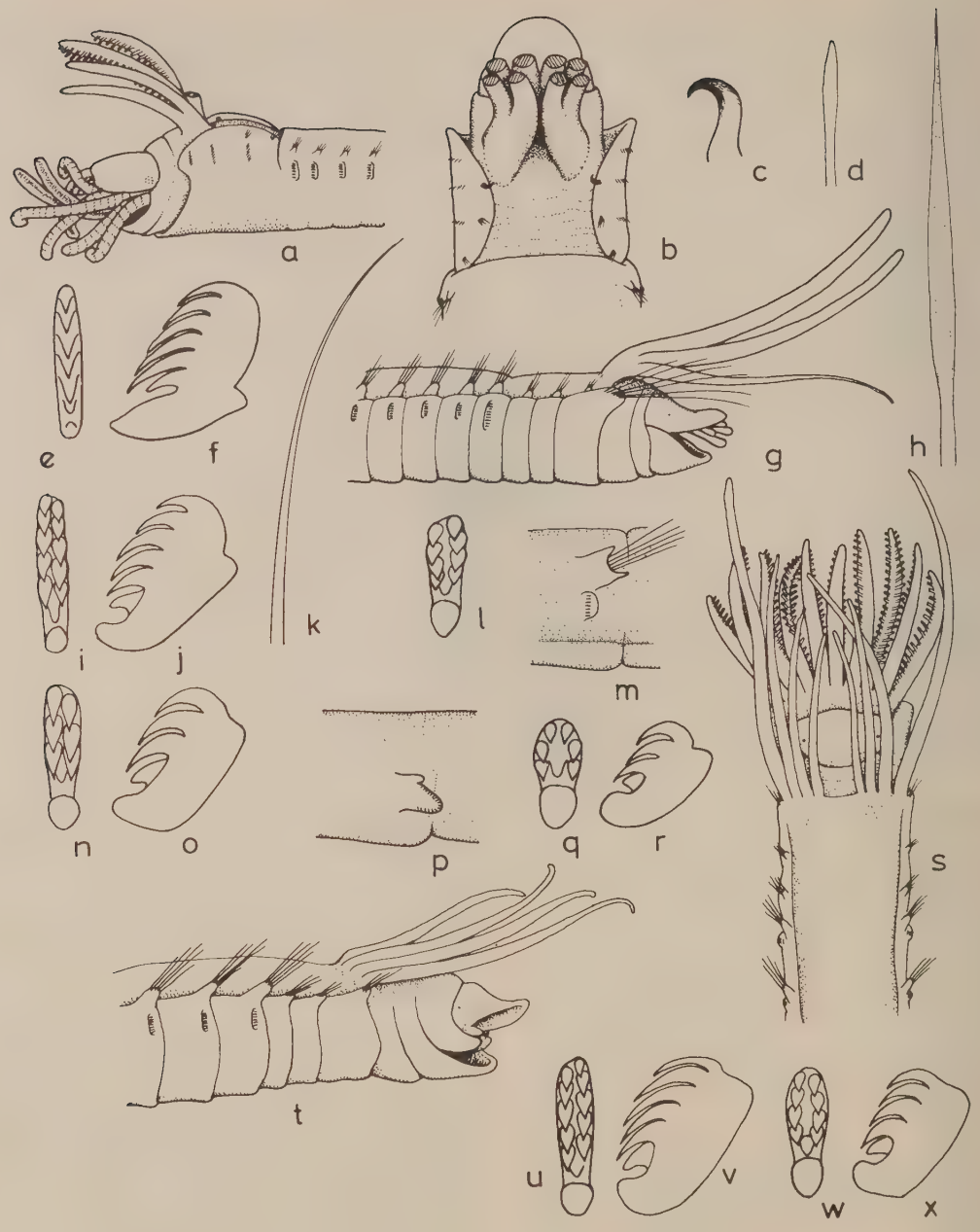

Figure 15.—*Isolda pulchella* a, lateral view of anterior end; b, dorsal view of branchial region with gills cut short; c, notopodial hook of segment 4; d, neuroseta of segment 3; e and f, edge-on and lateral views of thoracic uncinus. *Samythella eliasoni* n. sp. g, anterior end; h, thoracic capillary; i and j, edge-on and lateral view of thoracic uncinus; k, palea; l, edge-on view of abdominal uncinus; m, posterior thoracic parapodium. *Ampharete parvidentata* n. sp. n and o, edge-on and lateral views of thoracic uncinus; p, abdominal uncinigerous pinnule; q and r, edge-on and lateral views of abdominal uncinus; s, anterior end. *Ampharete americana* n. sp. t, anterior end; u and v, edge-on and lateral view of thoracic uncinus; w and x, edge-on and lateral view of abdominal uncinus.

long, outermost obviously tapered and more slender than other two. Branchial segments 3-6, all with notosetae but without neurosetae. Notosetae of segment 3 as long tapering paleae (Figure 15k) reaching tip of prostomium. Notosetae of segment 4 as minute winged capillaries, those of segments 5 and 6 longer but still shorter than those of uncinigerous segments. Twelve uncinigerous thoracic segments from segment 7. Notosetae (Figure 15h) as bilimbate capillaries; notopodial lobes of posterior thoracic segments with a pair of small cirriform projections (Figure 15m). Thoracic uncini (Figure 15i, j) with two rows of five teeth above rostral point and basal prow. Abdomen of 13-14 segments bearing oval uncinigerous pinnules without superior papillae. No vestigial notopodia. Anal cirri not evident. Abdominal uncini (Figure 15l) with an irregular double series of four teeth above rostral point.

Remarks.—The genus *Samythella* was erected by Verrill (1873a) for *S. elongata,* which lacks paleae, has 3 pairs of gills, 12 uncinigerous thoracic segments, uncini with a single row of teeth. As originally defined, *Samythella* was closely related to *Eusamytha* McIntosh and *Eclysippe* Eliason. *Samythella* was redefined by Day (1964) to include all three genera and in the emended definition paleae may be present or absent. The type species of *Eclysippe* is *Lysippe vanelli* Fauvel, with paleae smaller than the notosetae of the uncinigerous thoracic segments. Fauvel's description left it uncertain whether there were three or four pairs of gills. Eliason's description of *Eclysippe vanelli* is clear, and the species he examined is certainly the same as the one described above from Beaufort. I doubt, however, that it is the same as Fauvel's *Lysippe vanelli* and, for this reason, I have renamed it *Samythella eliasoni.*

Records.—One specimen off Beaufort in 200 m (*).

Distribution.—Sweden; in 15 m.

Amage auricula Malmgren, 1866

Amage auricula. - Wollebaek, 1912: 65, pl. 13: Fig. 1-6. - Hessle, 1917: 120. - Hartman, 1945: 44.

Records.—Beaufort, in shallow dredgings (11).

Distribution.—Arctic and cold North Pacific and Atlantic south to Sweden and North Carolina; in 0-200 m.

Amphicteis gunneri (Sars, 1835)

Amphicteis gunneri. - Hessle, 1917: 116, pl. 1: Fig. 9. - Fauvel, 1927: 231, Fig. 80 a-k. - Day, 1967: 695, Fig. 35.2. g-n.

Records.—Common off Beaufort in 40-120 m (21, *).

Distribution.—Cosmopolitan; from intertidal to abyssal depths.

Ampharete acutifrons Grube, 1860

Ampharete acutifrons. - Hessle, 1917: 96. - Day, 1967: 699, Fig. 35.4. a-f. - Hartman, 1969: 537, Fig. 1-4.

Ampharete grubei. - Fauvel, 1927: 227, Fig. 79 a-p.

Description.—Body tapered, 10-35 mm long. Prostomium as a bluntly triangular hood over mouth; one pair of small eyespots. Buccal cirri papillose. Two groups of four cirriform gills on branchial ridge across segment 3. A bundle of 12 large paleae on segment 3, and bundles of small notopodial capillaries on segments 5 and 6. Segment 4 achaetous and partly fused to segment 3. No neurosetae on segments 3 to 6. Twelve segments with winged capillaries in notopodia and uncini in neuropodia from segment 7 onwards. About 12 abdominal segments with a cirriform papilla at upper edge of each uncinigerous pinnule. Pygidium with a pair of anal cirri. Thoracic uncini with two vertical rows of four or five teeth above a small rostrum and basal prow.

Records.—Common off Beaufort in 20-160 m (21, *).

Distribution.—Arctic; eastern Atlantic from Norway to South Africa; California; 5-1,380 m.

Ampharete parvidentata New Species

Figure 15n-s

Ampharete n. sp. Day, Field, and Montgomery, 1971: 123.

Holotype.—USNM 43143; 19 paratypes, USNM 43144.

Description.—Holotype 12 mm long and encased in a friable mud tube. Prostomium (Figure 15s) as a rectangular lobe above the extruded buccal tentacles; no glandular ridges but two pairs of eyespots. Buccal tentacles stout and papillose. Branchial ridge on segment 3 well developed with two groups of four gills separated by a broad median gap. All gills long and cylindrical, with outer ones markedly longer than inner ones. Small capillary notosetae on branchial segments 3, 5 and 6. Segment 4 fused to segment 3 and achaetous. No neurosetae on segments 3-6. Twelve segments with well-developed notosetae and uncini starting from segment 7. Abdomen with 12 uncinigerous segments without rudimentary notopodia but with uncinigerous pinnules with well-marked superior papillae (Figure 15p). Pygidium with one pair of long anal cirri. Thoracic uncini (Figure 15n, o) with two vertical rows of three teeth above a medial rostral point and blunt basal prow. Abdominal uncini (Figure 15q, r) small, with six or seven teeth in a double row.

Remarks.—The shape of the prostomium in the Ampharetidae varies with the opening of the mouth. In the holotype, the mouth is expanded for the extrusion of the buccal cirri and the prostomium is roughly square; in many of the paratypes the mouth is closed and the prostomium is bluntly pointed in front and pinched in at the sides.

Most species of *Ampharete* have well-developed notosetae forming large paleae on segment 3; here they are very small and often difficult to see at the base of the outermost gill. Apart from this character, the most distinctive features are the broad gap between right and left groups of gills and the small number of teeth on the thoracic uncini; hence the specific name *Ampharete parvidentata.*

Records.—Fairly common off Beaufort in 35-120 m (21, *).

Ampharete americana New Species

Figure 15t-x

Holotype.—USNM 43141; seven paratypes, USNM 43142

Description.—Body 10 mm long and encased in a fragile mud tube. Prostomium (Figure 15t) bluntly triangular and folded in laterally; one pair of small lateral eyespots but no glandular ridges. Buccal tentacles papillose (observed on a paratype). Branchial ridge well marked with two groups of four long, subequal, cirriform gills narrowly separated in median line. Each group of gills with three in line and one slightly posterior in origin. A bundle of small notosetae on segment 3 and bundles of slightly larger notosetae on segments 5 and 6. Segment 4 achaetous and completely fused to segment 3. Twelve segments with well-developed notosetae and uncini starting from segment 7. Abdomen with 12 uncinigerous segments without vestigial notopodia and without superior papillae on the oval uncinigerous tori. Thoracic notosetae as broad-bladed bilimbate capillaries. Thoracic uncini 10 per row; individual uncini (Figure 15u, v) with two vertical rows of five teeth above the small median rostral point and blunt basal prow. Abdominal uncini (Figure 15w, x) shorter and broader than thoracic ones and with two irregular rows of four teeth.

Remarks.—When first examined, these small specimens were thought to be juveniles until it was noticed that one 10-mm specimen contained large eggs. The most characteristic feature is the small size of the notosetae on segment 3. The lack of superior papilla on the abdominal pinnules is unusual in *Ampharete* but these structures are often small and easily overlooked.

Records.—Fifteen specimens off Beaufort in 10-20 m (*).

FAMILY TEREBELLIDAE

Key to genera and species

1	Gills present on segments 2-4.	2
1′	Gills absent from segments 2-4. [Tentacular lobe large and frilly. Median ventral glandular pads reduced and ventrolateral areas of neuropodia swollen. No tube]	13

2	Thoracic neurosetae as long-shafted hooks starting on segment 6. Tentacular lobe frilly	3
2′	Thoracic neurosetae as avicular uncini starting on segment 5. Tentacular lobe collar-shaped	4
3	A single median gill with four partly fused lamellated lobes (*Terebellides*). Eighteen bundles of notosetae	*T. stroemii*
3′	Two or three pairs of simple cirriform gills (*Trichobranchus*). Fifteen bundles of notosetae. [Three pairs of gills]	*T. glacialis*
4	Gills as numerous simple filaments (*Thelepus*). [Gill filaments on three segments. Base on uncini produced forwards with a terminal attachment button and a small notch below it]	*T. setosus*
4′	Gills branched	5
5	Notosetae with denticulate tips. Lateral lobes either present or absent on segments 2-4. Over 20 segments with notosetae	6
5′	Notosetae with smooth tips. Lateral lobes present on segments 2-4. About 17-18 segments with notosetae	9
6	Gills with short basal stumps and long terminal branches; notosetae with short denticulate tips (*Amphitrite*). Small lateral lobes on segments 1, 2, and 3. [Over 35 segments with notosetae]	*A. ornata*
6′	Gills with well-developed trunks and short terminal branches. Notosetae with long denticulate tips in posterior segments. No lateral lobes on segments 2-4 (*Terebella*)	7
7	Two pairs of gills. Only posterior third of body without notosetae	*T. pterochaeta*
7′	Three pairs of gills. Notosetae continue to near end of abdomen	8
8	Posterior notosetae with a spur preceding the denticulate blade	*T. lapidaria*
8′	Posterior notosetae without a spur preceding the denticulate blade	*T. rubra*
9	Two pairs of gills (one often missing). Uncini avicular, those of first row often with long basal shafts (*Pista*)	10
9′	Three pairs of gills. Uncini pectinate, with a single vertical series of teeth and lack basal shafts (*Loimia*)	12
10	Gill filaments spirally branched, forming a compact tuft or "pom-pon" at end of trunk. [Uncini of first row with long, narrow shafts]	*Pista cristata*
10′	Gill filaments dendritically branched	11
11	Second pair of lateral lobes divided to form two tapered projections. Uncini of first row without long necks	*Pista palmata*
11′	Second pair of lateral lobes not divided. Uncini of first row with long necks and tapered shafts	*Pista quadrilobata*

12	Uncini with 5-6 teeth. Tubes constructed of sand and/or shells	*Loimia medusa*
12′	Uncini with 6-8 teeth. Tubes constructed of mud and sand	*Loimia viridis*
13	Notopodia of middle segments vascular and divided to form a tuft of branchial filaments with minute spinulose capillaries at their tips (*Enoplobranchus*)	*E. sanguineus*
13′	Notopodia never vascular or divided	14
14	No uncini even on posterior neuropodia and ventrum of thorax diffusely glandular. Notosetae present on thoracic segments at least	15
14′	Uncini present from 7th or more posterior segment. No achaetous middle region and capillary notosetae present from segment 2 (*Polycirrus*)	17
15	No achaetous middle region. Notosetae restricted to 6-12 anterior segments (*Lysilla*). [Notosetae minute and their distribution uncertain]	*L. alba*
15′	An achaetous middle region. Notosetae as capillaries on 9-13 anterior segments and acicular after the achaetous middle region (*Amaeana*)	16
16	Capillary notosetae all with smooth wings. Body purple	*A. trilobata*
16′	Capillary notosetae including winged forms and others with plumose blades like an ear of wheat. Body pale	*A. accraensis*
17	Notosetae including plumose forms with blades formed of a series of overlapping cones as well as larger, smooth-winged forms	*P. carolinensis*
17′	Notosetae not including plumose forms	18
18	Notosetae on 16-20 segments, all with minutely spinulose blades. Three large pairs of nephridia	*P. eximius*
18′	Notosetae on 25-32 segments, all with smooth to faintly hispid blades. Six large pairs of nephridia	*P. eximius dubius*

Terebellides stroemii Sars, 1835

Terebellides stroemi. - Fauvel, 1927: 291, Fig. 100 i-q. - Day, 1967: 713, Fig. 36.1. f-j.
Terebellides stroemii. - Hartman, 1969: 653, Fig. 1-7.

Records.—Off Beaufort in 40-200 m (18, 21, *).

Distribution.—Cosmopolitan from the Arctic to the Subantarctic; occasionally intertidal but usually at depths down to 4,000 m.

Trichobranchus glacialis Malmgren, 1866

Trichobranchus glacialis. - Fauvel, 1927: 288, Fig. 100 a-h. - Miner, 1950: 350, pl. 113. - Day, 1967: 711, Fig. 36.1. a-e.

Records.—Off Beaufort in 160-200 m (*).

Distribution.—Cosmopolitan; rarely intertidal but common in deeper water down to 200 m.

Thelepus setosus (Quatrefages, 1865)

Thelepus setosus. - Fauvel, 1927: 273, Fig. 95 a-h. - Hartman, 1951: 113; 1969: 649, Fig. 1-6. - Day, 1967: 729, Fig. 36.6. a.

Records.—Cape Hatteras to Beaufort, intertidal (15, 18, 20).

Distribution.—Cosmopolitan in all warm temperate areas; intertidal to about 100 m.

Amphitrite ornata (Leidy, 1855)

Amphitrite ornata. - Verrill, 1873a: 320, pl. 16: Fig. 82. - Hartman, 1945: 44.

Records.—Cape Hatteras to Beaufort Sound, intertidal to 18 m (3, 5, 7, 8, 11, 15, 18, 20).

Distribution.—Massachusetts to North Carolina; intertidal to a few meters in soft mud.

Terebella pterochaeta Schmarda, 1861

Terebella bruneo-comata Ehlers, 1887: 237, pl. 51: Fig. 1-5.

Amphitritides bruneo-comata. - Pearse and Williams, 1951: 139. - Hartman, 1959: 499.

Terebella pterochaeta. - Day, 1967: 747, Fig. 36.10. a-f.

Remarks.—*Terebella bruneo-comata* has been well described and illustrated by Ehlers (1887) and his description agrees in detail with the description of *Terebella pterochaeta* Schmarda, given by Day (1967). Both have 2 pairs of branched gills, notosetae with narrow wings and denticulate tips, and 16 ventral pads. *T. bruneo-comata* has 27 segments with notosetae and uncini with three arcs of close-set denticles while *T. pterochaeta* has 28-33 segments with notosetae and uncini with a crest of close-set denticles. Both characters are variable in the genus and the number of arcs of denticles, which are always irregular and integrated, is never clear. The two appear conspecific and Schmarda's name has priority. As Hessle (1917) has defined the genus *Terebella* with two or three pairs of branching gills, I see no point in referring this species to *Amphitritides* Augener.

Records.—On shallow reefs off North Carolina (14).

Distribution.—South Africa; tropical Indo-Pacific from the Red Sea to Indo-China; ? West Africa; North Carolina to Florida; intertidal to 50 m.

Terebella lapidaria Linnaeus, 1767

Terebella lapidaria. - Fauvel, 1927: 254, Fig. 87 f-l.

Records.—Cape Hatteras area, intertidal (18).

Distribution.—Warm North Atlantic from the English Channel to Morocco; Mediterranean; Massachusetts to North Carolina; intertidal to 30 m.

Terebella rubra (Verrill, 1873) (Homonym)

Lepraea rubra Verrill, 1873a: 321 (*non Terebella rubra* Risso, 1826).

Terebella rubra. - Hartman, 1945: 44; 1951: 112. - McCloskey, 1970: 28.

Remarks.—Hartman, (1959a) reported that *Terebella rubra* (Verrill) is a junior homonym. I have not seen a specimen but the published descriptions state that it has three pairs of gills, that the notosetae continue to near the end of the abdomen, and that individual notosetae do not possess a spur at the base of the denticulated blade. These characters suggest that Verrill's species must be close to *T. ehrenbergi* Grube from the Indo-Pacific and *T. schmardaei* Day from South Africa. Dr. Pettibone has suggested that the type be examined before it is renamed.

Records.—Cape Hatteras to Beaufort, intertidal to 7 m (3, 5, 11, 13, 15, 18, 20).

Distribution.—Massachusetts to North Carolina; intertidal to a few meters.

Pista cristata (Müller, 1776)

Pista cristata. - Fauvel, 1927: 266, Fig. 93 a-g. - Hartman, 1945: 44; 1951: 113; 1969: 615, Fig. 1-3. - Day, 1967: 738, Fig. 36.7. h-j.

Records.—North Carolina, intertidal to 20 m (3, 11, 13, 21, *).

Distribution.—Arctic and throughout the Atlantic to South Africa; Mediterranean; North Pacific; intertidal to 200 m.

Pista palmata (Verrill, 1873)

Scionopsis palmata Verrill, 1873a: 614, pl. 11: Fig. 3. - Miner, 1950: 349, pl. 113.

Pista palmata. - Hartman, 1951: 112.

Records.—Cape Hatteras to Beaufort Sound; intertidal to 7 m (3, 11, 13, 15, 18, 20).

Distribution.—Massachusetts to Florida and the Gulf of Mexico; intertidal to a few meters.

Pista quadrilobata (Augener, 1918)

Figure 16a-c

Nicolea quadrilobata. - Augener, 1918: 532, pl. 6: Fig. 183, pl. 7: Fig. 226-227, text Fig. 90.
Pista quadrilobata. - Day 1967: 740, Fig. 36.8. a-e.

Description.—Tentacular lobe collar-shaped, with orange tentacles and numerous eyespots. Buccal segment (Figure 16a) with large, wing-like lateral lobes united basally to form a sheath at base of tentacles; second segment short with rudimentary ventrolateral lobes; third segment with large lateral lobes. Two pairs of dendritically branched gills (one gill often missing). Smooth-tipped winged capillaries on 18 segments starting from segment 4. Rows of avicular uncini from segment 5. Uncini of first and second rows (Figure 16b, c) with a long neck below rostrum and base extending back as a short, tapered shaft; uncini of subsequent segments with shorter necks and without shafts.

Remarks.—This species is close to *Pista palmata* but the latter is reported to have the lateral lobes of segment 3 divided to form tapered projections and the uncini of the first row differ in shape.

Records.—Beaufort Sound between tide marks and on coral in 18 m off Beaufort (20, *). This is a new record for the United States.

Distribution.—South and South West Africa; intertidal to 20 m.

Loimia medusa (Savigny, 1818)

Loimia turgida. - Andrews, 1891a: 298, pl. 18: Fig. 46-49.
Loimia medusa. - Hartman, 1945: 46, pl. 10: Fig. 2, 3; 1951: 111; 1969: 601, Fig. 1-3. - Day, 1967: 743, Fig. 36.9. a-e.

Records.—Cape Hatteras to Beaufort, intertidal to 20 m (5, 7, 11, 13, 15, 18, *).

Distribution.—In warm to tropical waters of all oceans from 0 to 100 m.

Loimia viridis Moore, 1903

Loimia viridis Moore, 1903: 723, Fig. 11-14. - Hartman, 1945: 46, pl. 10: Fig. 4, 5; 1951: 111.

Remarks.—This species is closely related to *L. medusa* if not merely a variety of it. According to Hartman (1945) "*L. viridis* differs from *L. medusa* [see above] since it constructs mud-covered tubes instead of coarse shell-covered ones; ventral thoracic gland shields are notably broader and thicker and uncini have teeth more closely spaced." The uncini have six or seven (or eight) teeth whereas there are four to six in *L. medusa*.

Records.—Cape Hatteras to Beaufort, intertidal (11, 13, 18).

Distribution.—Massachusetts to the Gulf of Mexico; intertidal.

Enoplobranchus sanguineus (Verrill, 1873)

Chaetobranchus sanguineus. - Verrill, 1873a: 616.
Enoplobranchus sanguineus. - Hartman, 1942a: 75, pl. 113; 1944c: pl. 54: Fig. 8; 1945: 47.

Description.—Body markedly tapered, 100-350 mm long, red when alive. Tentacular lobe large and frilly, bearing numerous long contractile tentacles. Normal gills absent but notopodia branched and vascular from about segment 9. Vascular branches with small spinulose capillaries at their ends. Posterior notopodia not vascular and without notosetae. Neurosetae absent. Ventrum glandular and midventral pads greatly reduced. No tube.

Records.—Cape Hatteras to Beaufort on intertidal mudbanks and on coral at 6.5 m (3, 11, 13, 18, 20, *).

Distribution.—Gulf of St. Lawrence to North Carolina; intertidal to 6.5 m.

Lysilla alba Webster, 1879

Lysilla alba Webster, 1879: 63, pl. 10: Fig. 148. - Hartman, 1945: 47.

Records.—Beaufort, on sheltered shores (3, 11).

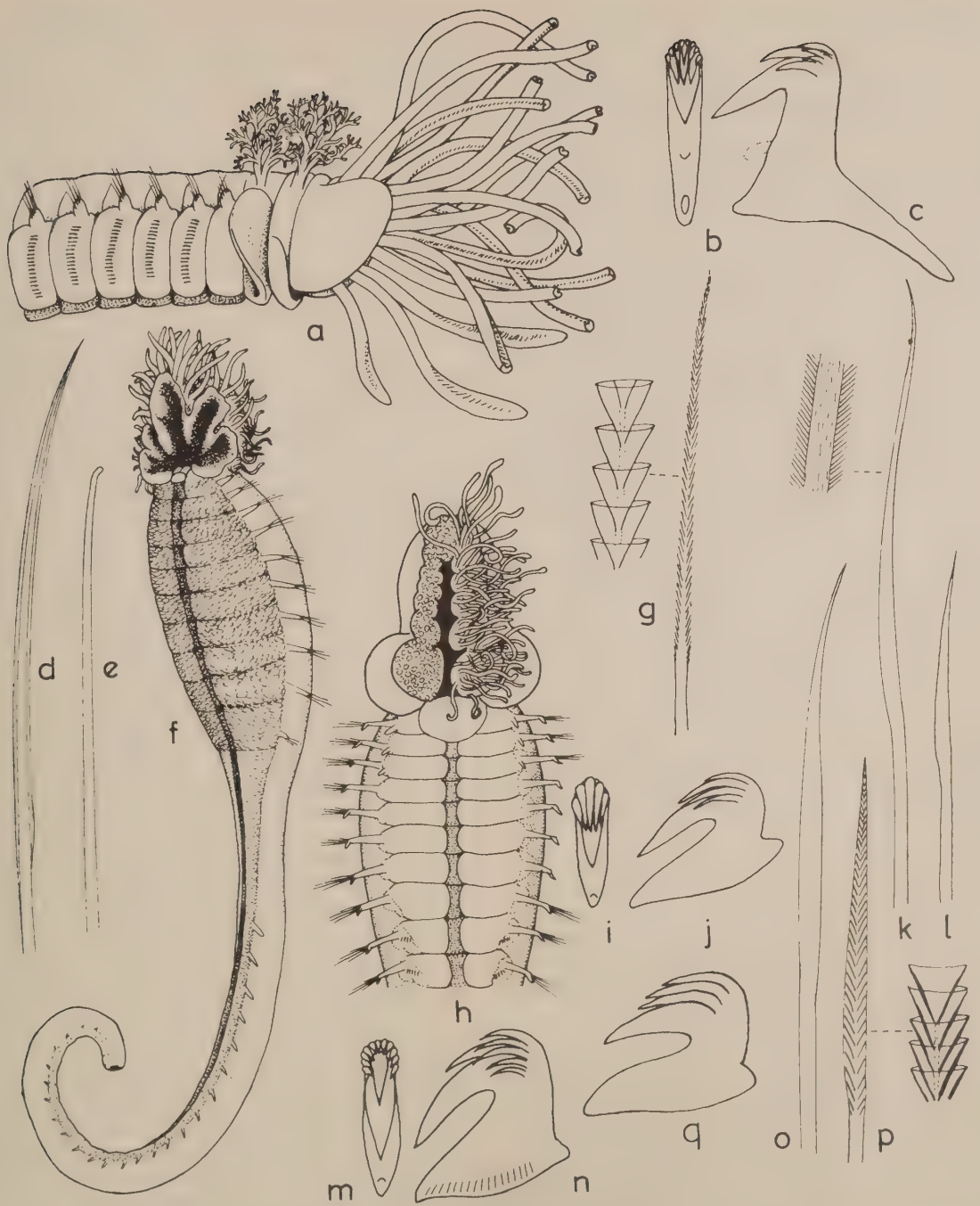

Figure 16.—*Pista quadrilobata* a, anterior end; b and c, edge-on and lateral views of uncinus from first row. *Amaeana trilobata* d, thoracic capillary seta; e, abdominal acicular seta; f, ventrolateral view of entire worm. *Amaeana accraensis* g, plumose capillary seta. *Polycirrus eximius* h, ventral view of anterior end; i and j, edge-on and lateral view of uncinus; k and l, longer and shorter capillary setae. *Polycirrus carolinensis* n. sp. m and n, edge-on and lateral views of uncinus; o, longer, smooth-bladed capillary; p, shorter pulmose capillary. *Polycirrus eximius dubius* n. subsp. q, profile of uncinus.

Distribution.—Massachusetts to North Carolina; intertidal.

Amaeana trilobata (Sars, 1863)

Figure 16d-f

Amaea trilobata. - Fauvel, 1927: 285, Fig. 99 a-e.
Amaeana trilobata. - Day, 1967: 718, Fig. 36.3. e-h.

Description.—Body purple when fresh, up to 20 mm long, swollen anteriorly, slender posteriorly. Tentacular lobe large, folded, often trefoil-shaped, bearing numerous short tentacles. No eyespots. No branchiae. Notosetae from segment 3, and setae sometimes retracted into notopodial lobes. First 10-11 setigers with small smooth-winged capillaries (Figure 16d) followed by 5 achaetous segments at junction of thorax and abdomen; finally about 30 abdominal segments bearing a few blunt acicular setae (Figure 16e) in notopodia. Neuropodia and neurosetae entirely absent. Ventrum of thorax (Figure 16f) swollen, glandular and tessellated, with a median groove concealing a row of nine poorly defined ventral pads.

Records.—Common off Beaufort in 80-200 m (21, *).

Distribution.—Arctic; Norway; New England; Mediterranean; South Africa; Japan; 50-500 m.

Amaeana accraensis (Augener, 1918)

Figure 16g

Amaea accraensis. - Augener, 1918: 561, pl. 7; Fig. 246, text Fig. 98. - Kirkegaard, 1959: 89, Fig. 22.

Description.—Generally similar to *A. trilobata* described above, with following exceptions: Body pale not purple; 11-13 thoracic segments with notosetae, not 10-11; notosetae of two types, longer ones with smooth narrow wings resembling those of *A. trilobata* and shorter ones (Figure 16g) with completely spinulose blades.

Remarks.—All 11 specimens collected were broken between the 9th and 11th setigerous segments, and no abdominal segments with acicular notosetae were obtained.

Records.—Off Beaufort in 80-160 m (21, *). This is a new record for the United States.

Distribution.—Ghana; ? South Africa; intertidal.

Polycirrus carolinensis New Species

Figure 16m-p

Polycirrus n. sp. - McCloskey, 1970: 26 (record only).

Holotype.—USNM 43122; four paratypes, USNM 43123.

Description.—Body uniformly pale in alcohol, 30 mm long for 80 segments, swollen anteriorly and constricted between setigers 10 and 15. Tentacular lobe large, irregularly folded, roughly trefoil-shaped, with numerous contractile tentacles. Notosetae from segment 2 and present on 33 segments in holotype (paratypes with 25, 27, 38, and 48 segments with notosetae). Notopodia without terminal free lobes. Neurosetae from 7th setigerous segment. Mouth with lower lip as a large ventral cushion. Ventral surface of thorax from segment 2 to 10 with glandular swellings. Ventral pads small and sunken in a midventral groove. Large nephridial papillae below notopodia of setigers 4, 5, and 6 and a doubtful one on setiger 3. Five or six pairs of large nephridia revealed by dissection. Notosetae of two types; four or five longer capillaries with smooth blades (Figure 16o) and three or four shorter capillaries with plumose blades (Figure 16p) formed by a series of overlapping cones on a slender axis. Neuropodial uncini small and arranged in a single row. Individual uncini (Figure 16m, n) with one large tooth and an arc of 8-10 small teeth above main fang; formula: MF: 1 : 8-10. Base of uncinus striated.

Remarks.—The type specimens were collected off Beaufort in 20 m on sand; Dr. McCloskey's specimens were collected off Beaufort on coral in 18.3 m. The plumose setae of *P. carolinensis* shows that it is related to *P. plumosus* Wollebaek, *P. medius* Hessle, and *P. coccinea* Grube but it differs from them in the number of segments bearing notosetae, the segment on which the first row of uncini occurs, and in the shape of the uncini themselves.

Records.—On coral and sand in 18.3-20 m off Beaufort (20, *).

Polycirrus eximius (Leidy, 1855)

Figure 16h-l

Torquea eximia Leidy, 1855: 146, pl. 11; Fig. 51, 52.

Material examined.—Three specimens identified by Verrill in 1881 from Station 1003 in Vineyard Sound, Mass. (USNM 8165). Six specimens dredged off Beaufort in 5-80 m.

Description.—Body up to 9 mm long for 52 segments. Tentacular lobe (Figure 16h) trefoil-shaped, with folded margins bearing numerous tentacles. No gills. Notosetae on 16-18 segments starting from second and all notopodia with terminal fleshy tags. Notosetae of two lengths (Figure 16k, l); both types bilimbate with minutely spinulose or hispid blades. Ventrum with a narrow medial groove separating 10 glandular ventrolateral swellings. Setigers 1-3 with obvious nephridial papillae; three pairs of large nephridia revealed by dissection. Uncini from setiger 7 (= segment 8). Individual uncini (Figure 16i, j) with a cap of about seven long teeth above main fang.

Remarks.—The description given above is based on the fresh specimens dredged off Beaufort. The three specimens identified by Verrill are similar apart from the following details. Notosetae are present on segments 18-20 instead of segments 16-18. Nephridial papillae were seen on setigers 1-6 instead of setigers 1-3 but dissection still revealed only three large pairs of nephridia although small ones may be present on the other three segments. The uncini were generally similar but the details were clearer; above the main fang there was a median tooth surmounted by an arc of six to eight teeth giving the formula MF : 1 : 6-8.

Leidy's type of *Torquaea eximia* has been lost and his description is inadequate. He comments on the red color of the body and the numerous extensible tentacles. The length of the worm was half an inch (? 12 mm) for 40-60 segments. The number of segments with notosetae was not stated but it was noted that uncini commence on segment 8, i.e., setiger 7. The figures of the notosetae and uncini are too small to show specific characters.

To summarize, it may be stated that the characters of the North Carolina specimens agree with the characters of specimens identified by Verrill and are consistent with Leidy's original description as far as it goes. It is worth noting too, that the above description of *P. eximius* agrees with that given by Fauvel (1927), for *Polycirrus tenuisetis* Langerhans from Madeira, with the exception that *P. eximius* is red in life while *P. tenuisetis* is colorless (? in life).

Later descriptions of *P. eximius* by Verrill and Smith (1874) and by Miner (1950) state that there are more segments with notosetae and that the uncini start after setiger 7. Possibly these descriptions refer to the different form described below.

Records.—Off Beaufort in 5-80 m (20, 21, *). The intertidal records by Webster (1879), Andrews (1891a), Hartman (1945), and Wells and Gray (1964) do not give diagnostic characters and are thus doubtful.

Distribution.—Massachusetts to North Carolina; ? Madeira; intertidal to 80 m on sandy mud.

Polycirrus eximius dubius New Subspecies

Figure 16q

Polycirrus eximius. - Verrill, 1873a: 616, pl. 16: Fig. 85. - McCloskey, 1970: 26.

Holotype.—USNM 43130.

Description.—Body pink in alcohol when fresh, about 20 mm long for 80 segments. Tentacular lobe large and frilly with numerous tentacles. No gills. Notosetae on 31 segments starting from segment 2; individual notopodia with terminal fleshy tags. Nephridial papillae obvious below notopodia of setigers 1-6, the first three larger than others. Six pairs of large nephridia revealed by dissection. Ventrum with a median groove separating 10 pairs of ventrolateral glandular swellings. A short row of uncini on setiger 9 and longer rows on subsequent segments. Notosetae of two lengths; longer ones with broader blades and shorter ones with narrower blades; both types with blades apparently striated under low magnification but finely spinulose when seen under oil-immersion. Uncini (Figure 16q) with an arc of about five long teeth above main fang.

Remarks.—The holotype was found on coral at 18 m off Beaufort by Dr. L. McCloskey. This subspecies has setae very similar to those of *P. eximius* Leidy described above but there are more segments with notosetae, the uncini first appear on setiger 9 and there are six large

pairs of nephridia not three large and the rest small. Verrill (1873a) describes *P. eximius* as having 25 segments with notosetae and uncini from setiger 8 and this description is repeated by Miner (1950). It is possible that *P. eximius* is a very variable species with 16-31 segments bearing notosetae, uncini commencing on setiger 7-9 and three to six pairs of large nephridia. However this range of variation is wider than is usual in the genus *Polycirrus* and until more specimens have been studied in detail it is better to treat these larger specimens with 25-31 bundles of notosetae as a separate subspecies.

Records.—On coral at 18 m off Beaufort (20, *).

Distribution.—Probably New England to North Carolina but records confused.

FAMILY SABELLIDAE

Key to genera and species

1	Thoracic neurosetae as a row of avicular uncini and often a row of pickaxe setae as well. Radioles usually with eyespots	2
1′	Thoracic neurosetae as a row of long-shafted hooks. Radioles without eyespots	10
2	A row of pickaxe setae as well as avicular uncini on thorax. No stylodes on radioles	3
2′	No pickaxe setae. Radioles with paired stylodes externally (*Branchiomma*). [Uncini with two arcs of denticles. Stylodes slender. Dark flecks on body]	*B. nigromaculata*
3	Collar setae in compact bundles and consist of long-winged capillaries	5
3′	Collar setae in long double rows and consist of stout capillaries with short blades just projecting from body (*Hypsicomus*)	4
4	Collar produced ventrally as a sheath to branchial lobes (*H. circumspiciens*)	No N.C. record
4′	Collar uniformly short, not produced ventrally	*H. phaeotaenia*
5	Thoracic notosetae include both winged capillaries and paleae with very short broad blades. [Dorsal radioles with eyespots halfway along (*Potamilla*)]	6
5′	Thoracic notosetae as winged capillaries with broader or narrower wings; no paleae	7
6	Collar prolonged ventrally forming a basal sheath for branchial lobes	*P. spathiferus*
6′	Collar not prolonged ventrally	*P. reniformis*
7	Two or more radioles, each with one large subterminal eye (*Megalomma*)	8
7′	Dorsal radioles with a series of small lateral eyespots (*Sabella*)	9
8	Subterminal eyes on most radioles. [Collar not notched dorsolaterally]	*M. lobiferum*
8′	Subterminal eye restricted to two dorsal radioles	*M. bioculatum*

9	Eyespots paired and regularly arranged along radioles	*S. melanostigma*
9′	Eyespots irregularly scattered along radioles	*S. microphthalma*
10	Abdominal segments with rows of minute uncini almost encircling body. Thoracic notosetae all winged capillaries. [Radioles united by a web (*Myxicola*)]	No N.C. record
10′	Abdominal segments with short compact rows of uncini. Thoracic notosetae include both winged capillaries and paleae	11
11	Radioles without lateral flanges and always separate. Abdominal notosetae avicular, with broad tails	*Jasmineira bilobata*
11′	Radioles flanged, sometimes partly united. Abdominal notosetae quadrangular, without tails	12
12	Radioles 3 pairs, not united by web. (*Oriopsis*)	*Oriopsis* sp.
12′	Radioles 6-10 pairs, united by web for half their length or more (*Chone*). [Collar not notched ventrally. Tips of radioles tapered. Juveniles with a caudal filament]	*C. americana*

***Branchiomma nigromaculata* (Baird, 1865)**

Branchiomma nigromaculata. - Hartman, 1951: 114. - Day, 1967: 770, Fig. 37.4. m-p.

Records.—Off Beaufort, intertidal to 20 m (13).

Distribution.—North Carolina to the West Indies; Cape Verde Islands; South Africa; Red Sea; tropical Indian Ocean; Japan; intertidal to about 50 m.

***Hypsicomus phaeotaenia* (Schmarda, 1861)**

Protulides elegans Webster 1884: 325, pl. 11: Fig. 63-74.
Hypsicomus torquatus. - Hartman, 1945: 47.
Hypsicomus elegans. - Hartman, 1951: 115.
Hypsicomus phaeotaenia. - Day, 1967: 761, Fig. 37.2. i-n.

Remarks.—Webster's original description and figures of *Protulides elegans* agree very closely with specimens of *Hypsicomus phaeotaenia* from the Indian Ocean examined by me and with the present specimen from Beaufort. The name *H. phaeotaenia* Schmarda has priority. Hartman (1945) reported a specimen from Beaufort as *H. torquatus* (Grube) and agreed with Augener (1922) that *Protulides elegans* Webster was a synonym. Since I have not seen Grube's original description I cannot comment on this synonymy but I do not agree with Hartman (1951) that *H. circumspiciens* Ehlers is a synonym of *Protulides elegans* Webster and thus a synonym of *H. phaeotaenia*. Ehlers' description and figures are very clear and the ventrally elongated collar of his *H. circumspeciens* is quite different from the short collar of *H. phaeotaenia*.

Records.—Cape Hatteras to South Carolina; intertidal to 20 m (5, 11, 13, 15, 18, 20, *).

Distribution.—North Carolina to the West Indies and the Gulf of Mexico; circumtropical; intertidal to 30 m.

***Potamilla (Potamethus) spathiferus* (Ehlers, 1887) New Combination**

Potamis spathiferus. - Ehlers, 1887: 278, pl. 54: Fig. 7-11, pl. 55: Fig. 1-4.

Description.—Body very slender, up to 48 mm long and encased in a sandy tube. No color markings. Branchial lobes long and slanting, each bearing a semicircle of six to nine separate, elongated radioles ending in very long tapered filaments. Collar with four lobes all projecting forwards; paired dorsal lobes smaller and narrower; paired ventrolateral lobes slanting, their ventral ends forming a sheath supporting the branchial base. Thorax with eight setigerous segments. Notosetae of setigers 2-8 include two or three winged capillaries and three to five paleae with oval blades and small tapered tips. Neurosetae include a row of pickaxe setae

with delicate symmetrical blades tapering to fine tips and a row of avicular uncini with striated crests, long arched necks and rather long shafts. Abdomen with about 70 segments; pygidium blunt. Abdominal notosetae as avicular uncini similar to those on thorax. Abdominal neurosetae as small winged capillaries with blades broad basally tapering to long slender tips.

Remarks.—As noted above, only one type of abdominal neuroseta was found in the specimens from Beaufort, namely capillaries with wings broad at the base and then narrowing to very long slender tips. These may be interpreted as modified paleae or winged capillaries. When partially retracted, only the long slender tip shows like a narrow-winged capillary, and it is possible that this is the reason why Ehlers describes (but does not figure) two types of abdominal neurosetae. Ehlers referred his specimens to *Potamis* but as this was preoccupied in the Lepidoptera, Chamberlin (1919) proposed a new name *Potamethus*. This appears so close to *Potamilla* that I have accorded it the rank of a subgenus.

Records.—Three specimens off Beaufort in 18 m on coral heads (20, *).

Distribution.—Florida and West Indies; in 10 to 500 m.

Potamilla reniformis (Leuckart, 1849)

Potamilla oculifera Verrill, 1873a: 322, pl. 17: Fig. 86.
Potamilla tortuosa Webster, 1879: 265, pl. 10: Fig. 149-153.
Potamilla reniformis. - Fauvel, 1927; 309, Fig. 107 a-l. - Johansson, 1927: 142. - Day, 1967: 764, Fig. 37.3. a-f.
Pseudopotamilla reniformis. - Hartman, 1945: 47; 1959a: 557.
Potamilla (Pseudopotamilla) oculifera. - Miner, 1950: 119.

Remarks.—I agree with Johansson that *Pseudopotamilla* Bush is not separable from *Potamilla* Malmgren.

Records.—Cape Hatteras to Beaufort, intertidal to a few meters (3, 11, 15, 18).

Distribution.—Cosmopolitan; intertidal to 100 m.

Megalomma lobiferum (Ehlers, 1887)

Branchiomma lobiferum Ehlers, 1887: 254, pl. 53: Fig. 10-15.
Megalomma lobiferum. - Hartman, 1951: 115.

Remarks.—This species is close to *M. vesiculosum* (Montagu) but differs in having a straight unnotched collar and pickaxe setae with symmetrical blades.

Records.—On shallow reefs off North Carolina (14).

Distribution.—North Carolina and Florida; intertidal to 4 m.

Megalomma bioculatum (Ehlers, 1887)

Branchiomma bioculatum Ehlers, 1887: 260, pl. 53: Fig. 1-9.
Megalomma bioculatum. - Hartman, 1951: 115.

Description.—Body up to 73 mm long with brown bars across radioles and sometimes brown marks on ventral surface of thorax. Tube covered with sand or gravel. Branchial lobes short, each with a semicircle of about 16 radioles. Palps short, broad, faintly spiral. Large subterminal eyes on dorsal pair of radioles preceding the very short naked tips. No eyes on other radioles. Collar low, widely divided dorsally, not notched dorsolaterally but slanting forward and forming paired triangular ventral lappets. Thorax of eight setigers with broad-winged capillaries of varying length in notopodia. Notosetae including an anterior row of pickaxe setae with plain delicate blades tapering symmetrically to fine tips and a posterior row of avicular uncini. Individual uncini with striated crests, short necks, and elongated bases. Abdomen with notosetae similar to avicular uncini of thorax; neurosetae as broad-winged capillaries.

Records.—Off Beaufort in 18-40 m (20, 21, *).

Distribution.—Florida and the Gulf of Mexico; in 20-200 m.

Sabella melanostigma Schmarda, 1861

Sabella melanostigma. - Ehlers 1887: 263. - Johansson, 1927: 121, text fig. 15.

Records.—Cape Hatteras to South Carolina, intertidal to about 50 m (14, 15, 18, 19).

Distribution.—North Carolina, Bermuda, and the West Indies; intertidal to 50 m.

Sabella microphthalma Verrill, 1873

Sabella microphthalma. - Hartman, 1942a: 80; 1945: 47; 1951: 117.

Records.—Cape Hatteras to South Carolina, intertidal to 40 m (2, 3, 5, 7, 11, 13, 14, 15, 18, 20, *).

Distribution.—Massachusetts to Florida and the Gulf of Mexico; intertidal to 40 m.

Jasmineira bilobata New Species

Figure 17m-v

Holotype.—USNM 43134; one paratype, USNM 43135.

Description.—Holotype incomplete, very slender, measuring 9 mm by 0.5 mm for 19 segments. Branchial lobes (Figure 17t) long and slanting, each with eight radioles united only at base. Each radiole with paired pinnules increasing in length distally, tip slender, hardly distinguishable from terminal pinnules. Ventralmost radiole much shorter than others with only two or three stumpy pinnules basally. Palps short and grooved. Lips with baggy ventral pouches (Figure 17s) partly covered by notched ventral projections of collar. Collar with two closely apposed dorsal lobes (Figure 17v), low lateral parts and ventral lobes produced forwards as notched lappets; dorsolateral notches between dorsal lobes and low lateral parts of collar. Thorax with eight setigers; first short and united to collar, remainder slightly broader than long. Setiger 1 with winged capillaries only; setigers 2-8 with one or two winged capillaries (Figure 17p) and four paleae (Figure 17o) having oval blades and short, finely pointed tips. Thoracic neurosetae as a row of five long-shafted hooks (Figure 17m, n) with a swelling at origin of shaft and a rostrum capped with a close-set series of denticles and a faint indication of a hood.

Abdomen broken after segment 9. Abdominal neurosetae include three winged capillaries (Figure 17q) and shorter forms with hastate blades embedded in the flesh. Abdominal notosetae as avicular uncini (Figure 17u, v) with four or five close-set arcs of denticles above rostrum and short, laterally compressed bases.

Remarks.—The shape of the collar immediately distinguishes *J. bilobata* from the well-known European species *J. elegans* Saint-Joseph, *J. caudata* Langerhans, and *J. candela* (Grube). Possibly the most closely related species is *J. filiformis* Hartman (1965a) from deep water off Brazil. It too, has a collar with elongated ventral lobes and thoracic hooks with a swelling at the origin of the shaft. Hartman's description is very brief but her figure does not show dorsal lobes to the collar or notches in the elongated ventral lobes. Moreover there are only four pairs of radioles and there is no mention of paleae among the thoracic notosetae.

Records.—Two specimens off Beaufort in 123 m (*).

? *Oriopsis* sp.

Description.—Length 3.5 mm including branchiae; 11 thoracic and 19 abdominal segments. Three pairs of flanged radioles. Collar low dorsally, widening laterally and forming two united triangular lobes ventrally; margin of collar smooth. Thoracic notopodia with three winged capillaries and two paleae bearing oval blades and fine tapering tips. Thoracic neurosetae as a row of four or five long-shafted hooks each with one large tooth and a close-set cap of small denticles above rostrum. Abdominal uncini almost square and arranged in rows of six or seven per notopodium. Individual uncini with a recurved basal prow and main fang surmounted by three or four rows of smaller teeth with four teeth per row.

Remarks.—The presence of paleae among the thoracic notosetae and the numerous abdominal segments are unusual in the genus *Oriopsis*. *Oridia crenicollis* Annenkova, shares these characters and is doubtfully referred to *Oriopsis* by Banse (1957). It differs from the Beaufort material in having a scalloped edge to the collar.

Records.—Off Beaufort in 40-160 m (*).

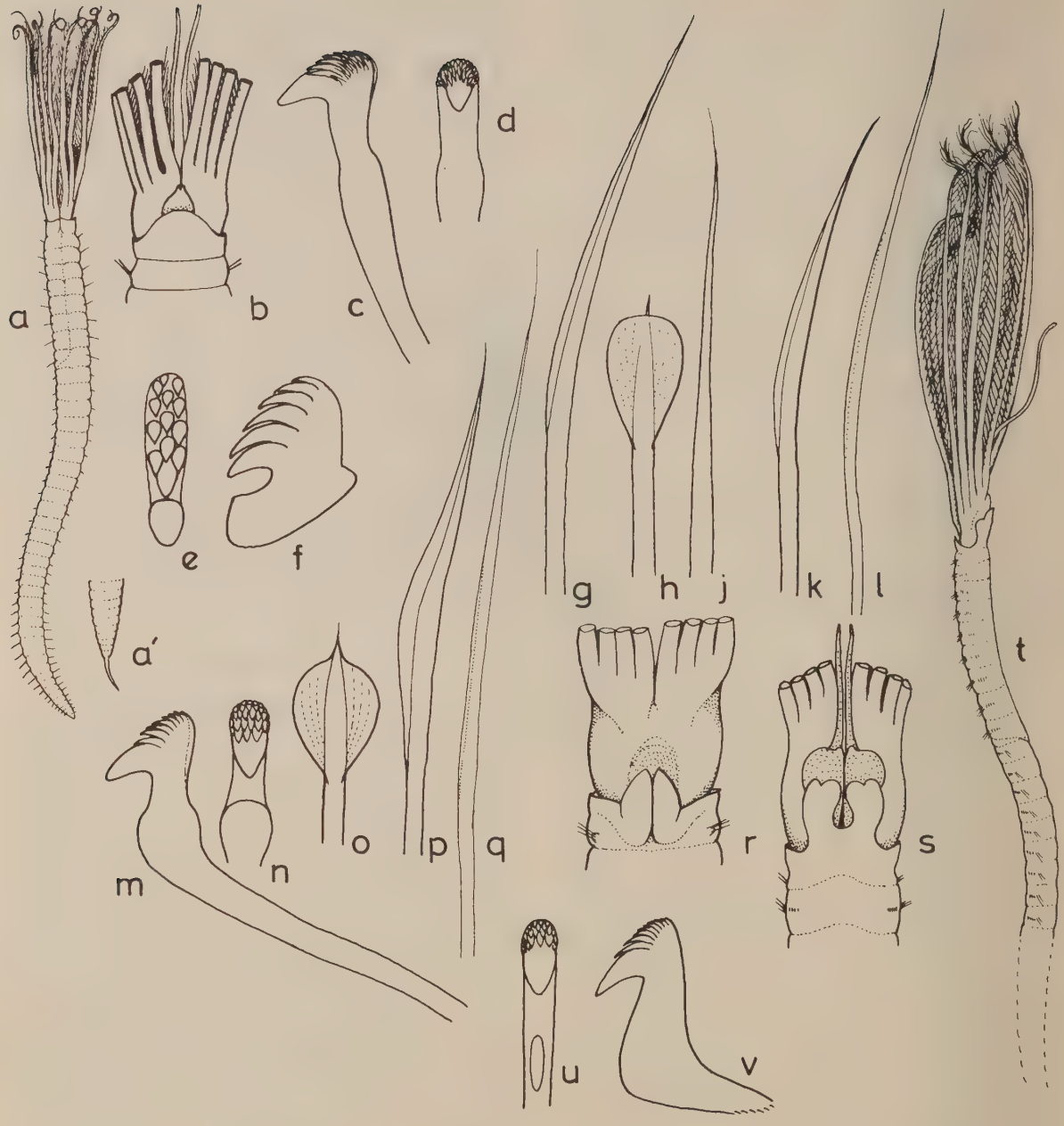

Figure 17.—*Chone americana* n. sp. a, dorsal view of entire worm; a', posterior end of juvenile; b, ventral view of collar and lips; c and d, lateral and edge-on views of thoracic hooks; e and f, edge-on and lateral view of abdominal uncini; g, thoracic winged capillary; h, thoracic palea; j, thoracic tapered capillary; k, winged capillary from anterior abdomen; l, slender capillary from posterior abdomen. *Jasmineira bilobata* n. sp. m and n, lateral and edge-on views of thoracic hook; o, thoracic palea; p, thoracic winged capillary; q, abdominal capillary; r, dorsal view of collar; s, ventral view of collar overlying ventral lips; t, lateral view of worm; u and v, edge-on and lateral views of abdominal uncinus.

Chone americana New Species

Figure 17a-l

Chone n. sp. - Day, Field, and Montgomery, 1971: 123.

Holotype.—USNM 43134; 50 paratypes, USNM 43135.

Description.—Holotype (Figure 17a), uniformly pale in alcohol, 26 mm long including branchiae; 8 thoracic and 43 abdominal setigers. Branchial lobes semicircular, each with 10 radioles united by a web for half their length. Tips of radioles very long and tapered. Ventralmost radioles short with few pinnules or none. Palps short, triangular, abruptly tapered. Lips (Figure 17b) fused ventrally to form a notched triangle. Collar narrowly divided dorsally, very low and smooth-edged laterally, slightly wider ventrally but not notched or divided in midventral line. Thorax of eight biannulate setigers. Abdomen tapered with 43 setigers; pygidium pointed.

Thoracic notosetae of three types: five or six narrow-winged capillaries (Figure 17g), six to eight paleae with rounded blades and short pointed tips (Figure 17h), and a few slender, deeply embedded setae with fine tips barely projecting through skin. Thoracic neurosetae as a row of about five long-shafted hooks (Figure 17c, d) with a close-set cap of denticles and a delicate hood over the main fang. Anterior abdominal segments with normal winged capillaries (Figure 17k) in neuropodia and uncini in notopodia. Individual uncini (Figure 17e, f) with short square bases and three rows of four or five teeth above rostrum. Posterior abdominal neuropodia with long slender-winged capillaries (Figure 17l).

Remarks.—Juvenile paratypes may have as few as 6 radioles and the number of abdominal segments may be as low as 30. In these young specimens the pygidium ends in a well-developed caudal filament (Figure 17a) but intermediates between this and the adult type occur.

Chone americana is allied to *C. filicaudata* Southern; the juveniles with their long caudal filaments were at first thought to belong to this species although the paleae and abdominal uncini differ. The adult form is closer to *C. duneri* but the latter has a better developed collar.

Records.—Common off Beaufort in 19 to 160 m (*).

FAMILY SERPULIDAE

Key to genera and species

1	Thorax symmetrical with 5-12 setigers	2
1′	Thorax asymmetrical with 3-4 setigers. [Shell small and spirally coiled (*Spirorbinae*)]	14
2	Operculum always present; no pinnules on opercular stalk. Thorax with 6-7 setigers (*Serpulinae*)	3
2′	Operculum absent or poorly developed; pinnules present on opercular stalk. Thorax with 5-12 setigers. [Collar setae with a separate toothed lobe at base of blade (*Filograna*)]	*F. implexa*
3	Opercular stalk with a pair of small wings below operculum	4
3′	Opercular stalk wingless, but sometimes wrinkled or annulated	5
4	Collar setae as a few winged capillaries. Operculum as a flat or conical calcareous plate (*Pomatoceros*). [Operculum without three-pronged projections and usually conical with a dorsal talon]	*P. americanus*
4′	Collar setae with a spinulose lobe at base of blade. Operculum as a calcareous plate with branching projections (*Spirobranchus*)	*S. giganteus*

5	Collar setae include stout bayonet-setae with conical bosses at base of smooth blade	6
5′	Collar setae all winged capillaries with smooth or serrated blades. [Operculum chitinous, either conical or cylindrical]	13
6	Operculum a simple funnel formed of fused radii. (*Serpula*) [Inner surface of funnel minutely granular]	*S. vermicularis granulosa*
6′	Operculum of two parts: a basal funnel of fused radii and an upper crown of 8-14 horny spines. (*Hydroides*) [Tips of radii ending in simple points]	7
7	Opercular spines with one or more pairs of lateral spinules; [tips curved inwards]	8
7′	Opercular spines without lateral spinules	10
8	Opercular spines with 2-3 pairs of lateral spinules. Bayonet-setae with denticulate shaft-heads. Tube attached to floating objects (*H. elegans*)	No N.C. record
8′	Opercular spines with one pair of lateral spinules. Bayonet-setae with shaft-heads smooth apart from the two conical bosses	9
9	Opercular spines equal in size	*H. crucigera*
9′	Opercular spines unequal; [often knobbed at point of inflection]	*H. parva*
10	Tips of opercular spines all curved inwards toward center	11
10′	Tips of opercular spines not all curved inwards toward center	12
11	Opercular spines graded in length. Many spines with an external conical spinule near base	*H. sanctaecrucis*
11′	Opercular spines equal in length. All spines with an inner hooked spinule near base	*H. uncinatus*
12	Tips of spines curved in same direction, some pointing inwards, some sideways, and some outwards	*H. dianthus*
12′	Tips of spines curved outwards. [Tips of radii curved outwards]	*H. protulicola*
13	Opercular stalk annulated, replacing second dorsal radiole on left side. Operculum without internal septa. Gauge of uncinus simple (*Metavermilia*)	*M. multicristata*
13′	Opercular stalk wrinkled, replacing first dorsal radiole on right side. Operculum truncate with internal septa and external rings. Gauge of uncinus bifurcate (*Vermiliopsis*)	*V. annulata*
14	Shell coiled anticlockwise when seen from above. Incubation in tube. Collar setae without a fin at base of blade	*Spirorbis (Circeis) spirillum*
14′	Shell coiled anticlockwise when seen from above. Incubation in operculum. Collar setae with a fin at base of blade	*Spirorbis (Janua) corrugatus*

Filograna implexa Berkeley, 1828

Filograna implexa. - Fauvel, 1927: 376, Fig. 129 a, b. - Day, 1967: 817, Fig. 38.7. a-h. - Zibrowius, 1968: 179, pl. 10: Fig. 1-12.
Salmacina dysteri. - Fauvel, 1927: 377, Fig. 129 c-k. - Hartman, 1951: 120.

Records.—Cape Hatteras to South Carolina, intertidal to 20 m (11, 13, 14, 18, *).

Distribution.—Cosmopolitan in temperate and tropical seas; intertidal to over 100 m.

Pomatoceros americanus New Species

Figure 18a-f

Pomatoceros caeruleus. - Wells and Gray, 1964: 74 (*non* Schmarda).
Pomatoceros triqueter. - McCloskey, 1970: 26 (*non* Linnaeus).
Pomatoceros n. sp. - Day, Field, and Montgomery, 1971: 123.

Holotype.—USNM 43131; ca. 100 paratypes, USNM 43132.

Description.—Tube (Figure 18a) pinkish white, triangular in section; median ridge smooth and projecting as a tooth over aperture. Body up to 18 mm long. Branchial crown formed of two arcs of 12-15 radioles united by a web for one-third their length. Radioles with two blue bands when fresh. Opercular stalk blue, triangular basally but flattened and broader distally, with a pair of smooth narrow wings below operculum. Operculum (Figure 18c, d) swollen, apex conical, and calcareous resembling a Phrygian cap; some paratypes with operculum covered by a flattened calcareous plate (Figure 18b).

Collar incised ventrolaterally forming paired lateral lobes and a median ventral lobe with small fillets in incisions. Lateral lobes extending back as thoracic membranes to end of thorax and united ventrally as a small apron at origin of abdomen. Collar setae as a few, small limbate capillaries. Notosetae of setigers 2 to 7 as larger limbate capillaries. Thoracic neurosetae as long rows of uncini; individual uncini (Figure 18f) with one row of about 12 teeth preceding a broad emarginate gouge. Abdominal neurosetae elongated on posterior segments but all with a denticulate apex produced as a spike on one side (Figure 18e).

Remarks.—*Pomatoceros americanus* differs from the European *P. triqueter* mainly in the shape of the operculum. Tricorn projections which often occur on the opercular plate of *P. triqueter*, are absent in *P. americanus*, and conical cap with its rectangular talon, when well developed, is very characteristic. Specimens of *P. triqueter*, kindly loaned to me by Dr. George of the British Museum, do not show this character.

P. americanus has been confused with *P. caeruleus* (Schmarda), originally described as *Placostegus caeruleus* from the Cape of Good Hope and New Zealand. As shown by Day (1955), the Cape form is a distinct species which lacks collar setae and is now known as *Pomatoleios kraussii* (Baird); the New Zealand form of *P. caeruleus* has an operculum with two tiers of plates and has not been recorded with certainty from America. *P. americanus* has also been confused with *Pomatoleios caerulescens* Augener, from the Gulf of Mexico and *Pomatoceros minutus* Rioja recorded from both coasts of Mexico and by Zibrowius (1969) from Brazil. A discussion of these species will be found in Zibrowius (1970b: 15). *P. minutus* differs from *P. americanus* in having a tube with three ridges, in its smaller size (maximum length 6 mm), only five or six radioles to each branchial lobe, an operculum with a bilobed calcareous plate, and thoracic uncini with a bifurcated gouge.

Records.—Abundant on corals and *Pecten* shells in 18-40 m off Beaufort (19, 20, 21, *).

Distribution.—I am indebted to Dr. H. Zibrowius for the following extension of range: off Sapelo Island, Ga., in 34 m; south of Tortugas, Fla., in 75 m; Gulf of Mexico, lat 29°25′N, long 88°40′W in 40 m.

Serpula vermicularis granulosa Marenzeller, 1884

Figure 18g

Serpula granulosa. - Marenzeller, 1884: 19, pl. 4: Fig. 1.
Serpula vermicularis. - McCloskey, 1970: 26.

Description.—Tube pinkish white, circular in section, faintly ridged. Body 20 mm long. Opercular stalk smooth and wingless; operculum (Figure 18g) as a shallow funnel formed of 20-40 radii with blunt tips; inner surface of funnel with

numerous granules. Collar incised, forming a median ventral lobe and paired lateral lobes. Lateral lobes continuous with thoracic membranes reaching setiger 7 and uniting ventrally as a short apron at origin of abdomen. Collar setae include limbate capillaries and stout bayonet-setae with two bosses at base of blade. Thoracic uncini with one row of six teeth graded in size. Abdominal uncini with four to eight teeth but otherwise similar to those of thorax. Abdominal neurosetae changing from T-shaped forms, with a denticulate blade at right angles to shaft, to slender, wingless capillaries near posterior end of abdomen.

Remarks.—As shown by the above description, the subspecies *granulosa* is similar to *S. vermicularis* apart from the granules on the operculum. I do not feel that it merits specific rank.

Records.—On coral off Beaufort in 18 m (20, *).

Spirobranchus giganteus (Pallas, 1766)

Spirobranchus giganteus. - Ehlers, 1887: 286, pl. 57: Fig. 1-7. - Pixell, 1913: 80, pl. 8: Fig. 6. - Day, 1967: 803, Fig. 38.3. h-k. - ten Hove, 1970: 14, pl. 2: A, B, Fig. 35-63. - Zibrowius, 1970: 14, pl. 3: Fig. 1-10.

Records.—Off Beaufort on corals in 18 m (20, *).

Distribution.—Circumtropical in 0-50 m.

Hydroides crucigera Mörch, 1863

Hydroides crucigera. - Monro, 1933c: 1083, Fig. 26.

Hydroides bispinosa. - Bush, 1910: 496. - Hartman, 1942a: 88.

Records.—Cape Hatteras area, intertidal, and off Beaufort on coral in 18 m (18, 20, *).

Distribution.—South America (Punta Arenas); Burmuda; North Carolina; Gulf of Panama; Hawaii; intertidal to 30 m.

Hydroides parva (Treadwell, 1901)

Eupomatus parvus Treadwell, 1901: 210, Fig. 79, 80.

Hydroides (Eupomatus) parvus. - Augener, 1933: 366.

Hydroides parvus. - Zibrowius, 1970: 6, pl. 1: Fig. 5, 6.

Records.—Cape Hatteras area, intertidal (18).

Distribution.—North Carolina to the West Indies; Gulf of Mexico and Columbia; intertidal.

Hydroides sanctaecrucis (Mörch, 1863)

Hydroides sanctae-crucis. - Fauvel, 1919a: 478, Fig. 23.

Eupomatus floridamus. - Wells and Gray, 1964: 74.

Records.—North Carolina, Gulf of Mexico and French Guiana; intertidal to a few meters.

Hydroides dianthus (Verrill, 1873)

Eupomatus dianthus. - Hartman, 1945: 48, pl. 10: Fig. 1; 1951: 118. - Rioja, 1957: 260, Fig. 15.

Hydroides dianthus. - Zibrowius, 1971a: 697, Figs. 1-5.

Records.—Cape Hatteras to South Carolina, intertidal to about 30 m (5, 8, 9, 11, 13, 14, 15, 18, 19, 20, *).

Distribution.—Massachusetts to the West Indies and the Gulf of Mexico; Mediterranean; intertidal to 30 m.

Hydroides uncinata (Philippi, 1844)

Figure 18 h, i

Eupomatus uncinatus. - Ehlers, 1887: 285, pl. 58: Fig. 6-11. - McCloskey, 1970: 26.

Hydroides uncinata. - Fauvel, 1927: 357, Fig. 122 a-h. - Zibrowius, 1968: 109, pl. 13: Fig. 28.

Description.—Length up to 60 mm. Tube stout, rugose, adnate, often irregularly coiled. Opercular stalk without wings. Opercular funnel (Figure 18h) radially symmetrical and formed of about 30 radii ending in tapered points. Opercular crown of 10-11 equal horny spines curving inwards and ending in sharp points; a faint lateral flange proximally, but no lateral

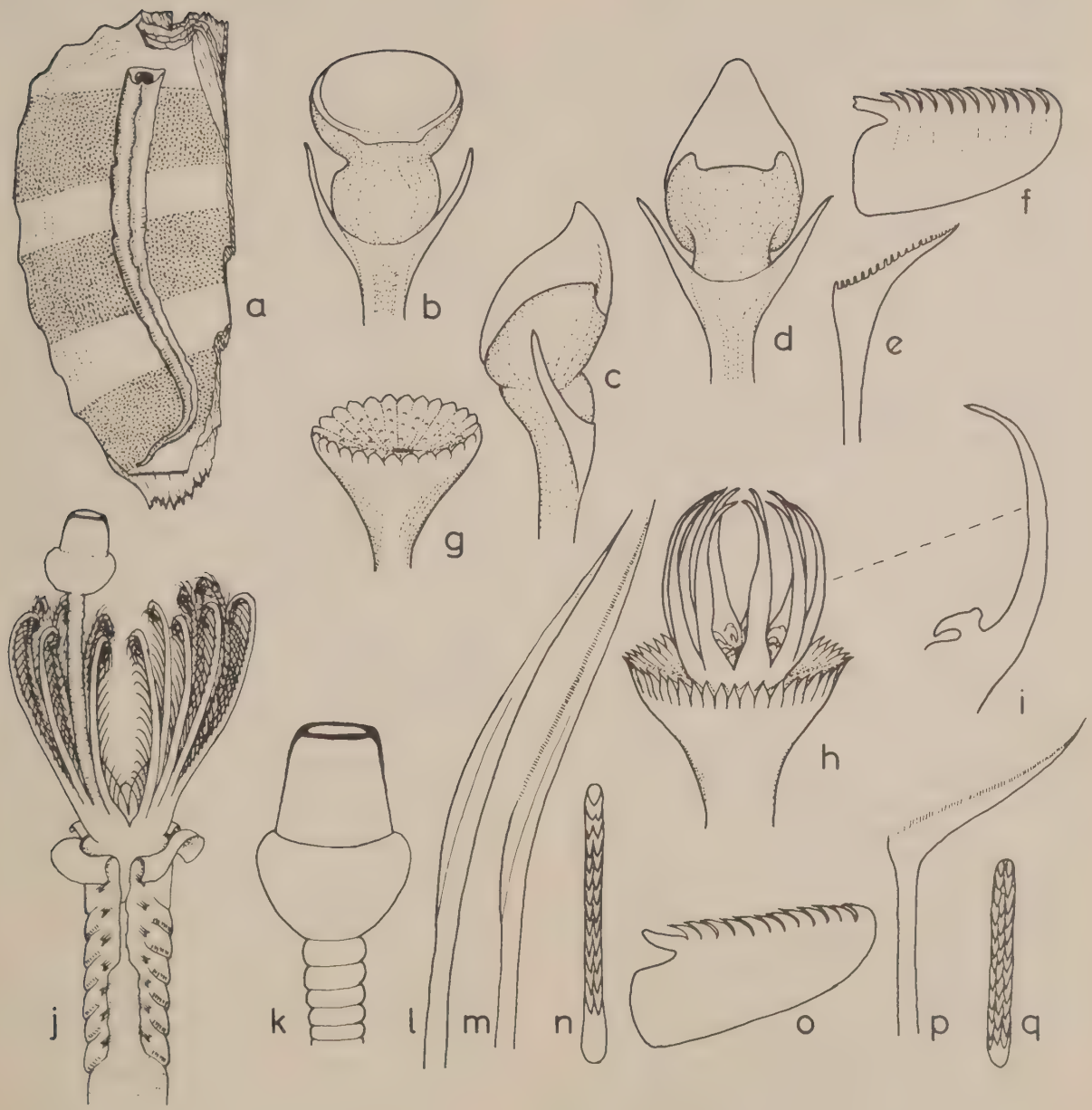

Figure 18.—*Pomatoceros americanus* n. sp. a, tube; b, flat form of operculum; c and d, lateral and dorsal views of conical form of operculum; e, abdominal neuroseta; f, thoracic uncinus. *Serpula vermicularis granulosa* g, operculum. *Hydroides uncinata* h, operculum; i, lateral view of a spine from the crown. *Metavermelia multicristata* j, dorsal view of anterior end; k, operculum; l, thoracic winged capillary; m, "seta of *Apomatus*"; n and o, edge-on and lateral views of thoracic uncinus; p, abdominal geniculate seta; q, edge-on view of abdominal uncinus.

spinules; each spine (Figure 18i) with an inwardly directed hook at its base. Seven thoracic setigers. Thoracic membranes extending to end of thorax. Bayonet-setae with a pair of smooth, conical bosses at base of smooth blade. Thoracic uncinigerous rows black; individual uncini with six or seven teeth.

Remarks.—*H. uncinata* is distinguished from *H. pseudouncinata* and *H. gairacensis* by the simple points to the radii. Zibrowius (1970a: 693) reports that the worldwide records of *H. uncinata* are based on several closely allied but distinct species. He regards Philippi's original description of *H. uncinata* as insufficient and feels the name should be dropped. These specimens from North Carolina belong to a group or possibly one species including *H. spongicola* Benedict, *H. elegantulus* Bush, *H. decora* Treadwell, and *H. alatalateralis* (Jones). I do not have the specimens to sort out this tangle. I report the name *H. uncinata* and the above description and leave other workers with the necessary material to investigate further.

Records.—Off Beaufort in 6.5-18 m (20, *).

Hydroides protulicola Benedict, 1887

Hydroides protulicola Benedict, 1887: 550, pl. 20: Fig. 71, pl. 21: Fig. 18-23.
Eupomatus protulicola. - Rioja, 1946: 199, Fig. 10-13. - Hartman, 1951: 119.

Records.—Cape Hatteras to Beaufort, intertidal to 40 m (13, 18, *).

Distribution.—Cape Hatteras and North Carolina to the Gulf of Mexico; intertidal to 40 m.

Metavermilia multicristata (Philippi, 1844)

Figure 18j-q

Vermiliopsis multicristata. - Zibrowius, 1968: 128, pl. 3: Fig. 25-34, pl. 14: Fig. g.
Vermiliopsis occidentalis. - McCloskey, 1970: 28 (*non* McIntosh).
Metavermilia multicristata. - Zibrowius, 1971b: 1375, Fig. 1.

Description.—Tube adnate, with three ridges including a low, regularly scalloped lateral pair, and a smooth median keel; no transverse ridges formed by earlier apertures. Body slender, 11 mm long, uniformly pale in alcohol. Branchial crown (Figure 18j) formed by two slanting branchial lobes each bearing seven radioles. Opercular stalk formed from long and annulated second dorsal radiole; no wings. Operculum (Figure 18k), fig-shaped with base soft, swollen, and white; heavily chitinized distal part brown, with a faint rim around truncate end; no internal septa. Collar frilly and incised, forming paired lateral lobes and a single ventral lobe; lateral lobes continuous with wide thoracic membranes to setiger 3 then abruptly narrowed but reaching end of thorax. Collar setae as slender-winged capillaries; notosetae of setigers 2 to 7 with many winged capillaries (Figure 18l) and a few "setae of *Apomatus*" (Figure 18m) with most of blade finely dentate. Thoracic uncini (Figure 18n,o) with a single or double row of 12 teeth preceding the large truncate gouge. Abdominal uncini (Figure 18q) with two or three rows of 10 teeth; abdominal capillaries (Figure 18p) geniculate, with a tapering denticulate blade almost at right angles to shaft.

Remarks.—*V. multicristata* is unusual in that the opercular stalk replaces the second and not the first radiole of the left branchial lobe, further the opercular stalk is annulated and the operculum itself lacks internal septa. Further remarks will be found in Zibrowius (1968). It will be noted that the tube described above differs from that described by Zibrowius which usually has five to seven dentate ridges.

Records.—On corals in 18 m off Beaufort (20, *). This is a new record for the United States.

Distribution.—Mediterranean and warm eastern Atlantic from the Bay of Biscay to Madeira, Canary Islands, and Ghana; from shallow water to 943 m.

Vermiliopsis annulata (Schmarda, 1861)

Vermilia annulata Schmarda, 1861: 28, pl. 21: Fig. 176. - Ehlers, 1887: 308, pl. 58: Fig. 12-16; pl. 59: Fig. 1-3.

Records.—On coral reefs in North Carolina in a few meters (14).

Distribution.—North Carolina to Florida and the West Indies; intertidal to 4 m.

Spirorbis (Circeis) spirillum Linnaeus, 1767

Spirorbis (Dexiospira) spirillum. - Fauvel, 1927: 392, Fig. 132, f-p. - Bergen, 1953: 41, Fig. 6 a-c, pl. 1: Fig. h-i. - Gee, 1964: 417, Fig. 6 a-f.

Spirorbis (Circeis) spirillum. - Bailey, 1969: 401 (list only).

Remarks.—This is a very doubtful record.

Records.—On *Pecten* shells off Beaufort; intertidal to 20 m (15).

Distribution.—Arctic; North Pacific; North Atlantic; intertidal to 20 m.

Spirorbis (Janua) corrugatus (Montagu, 1803)

Spirorbis (Dexiospira) corrugatus. - Fauvel, 1927: 393, Fig. 133 h-p. - Hartman, 1951: 121. - Zibrowius, 1968: 203. pl. 13: Fig. 16-27.

Spirorbis (Janua) corrugatus. - Bailey, 1969: 401 (list only).

Remarks.—Professor Knight-Jones, in a personal communication, suggests that the record from *Sargassum* may refer to the allied species *S. (J.) formosus* Bush.

Records.—On *Sargassum* cast ashore near Cape Hatteras (18).

Distribution.—Mediterranean; warm and tropical Atlantic to the Gulf of Mexico; intertidal to a few meters.

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